THE IRON AGE

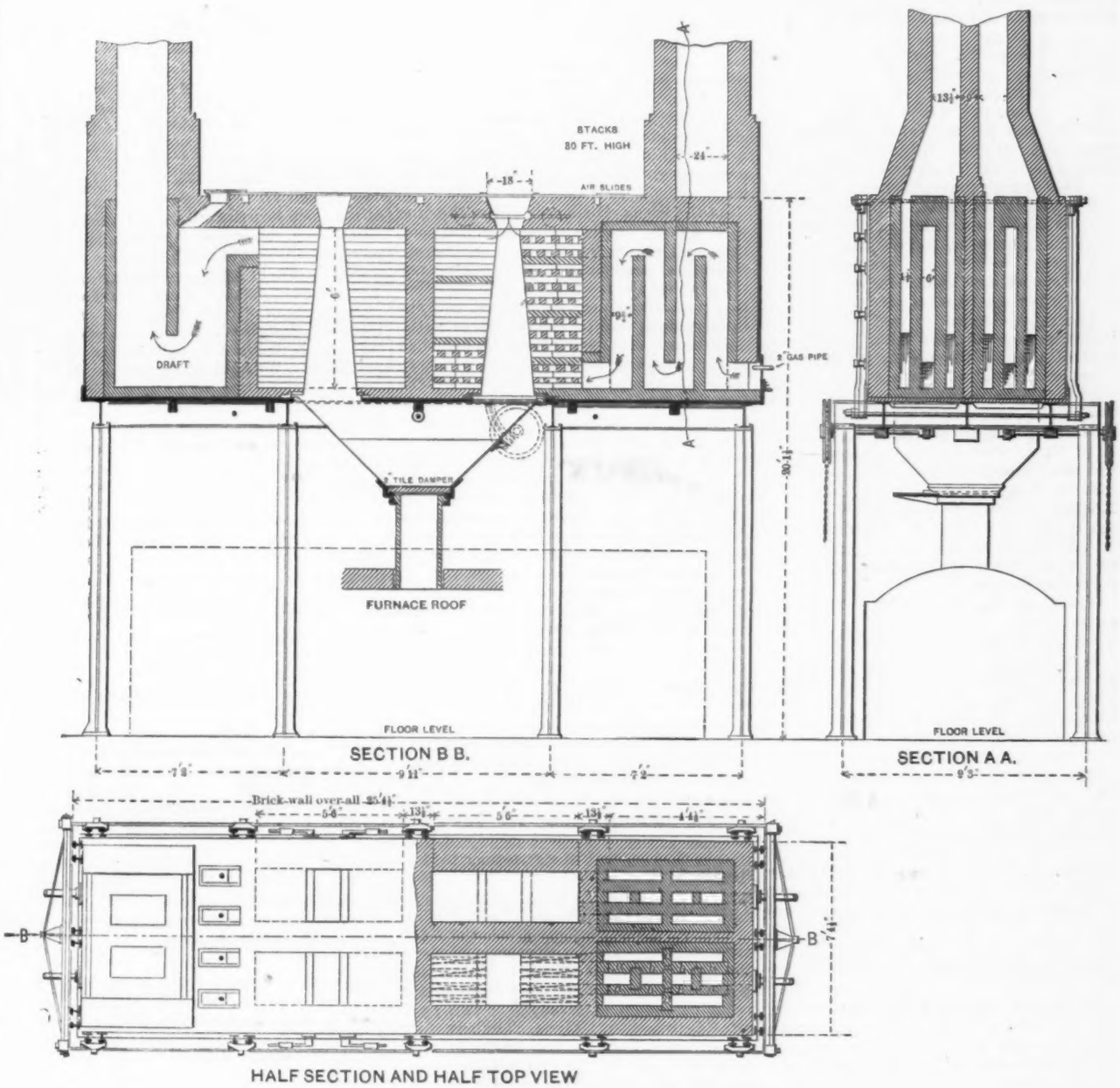
THURSDAY, NOVEMBER 13, 1890.

Direct Process of Making Iron and Steel.

In our issue of September 18, 1890, we illustrated and very fully described the Adams direct process. We are now enabled to present a complete description of the Adams apparatus and process for the manufacture of open hearth steel as it is at present employed at the works of Park Bro. & Co., Limited, of Pittsburgh. The following account is prepared from data, in part collected during visits to the plant and in part from the records of actual working, both at Pittsburgh and Indianapolis:

An idea seems to be prevalent among those who have given the subject attention, that the horizontal movement of the current of gas which effects the deoxidation of the ore is the essential feature of the Adams process. Those interested in it claim that this is not the case. The Steel and Iron Improvement Company have in operation, under the same roof with their open hearth furnace, a furnace for testing the behavior of different kinds of iron ore under the gas treatment, and in this they employ, not a horizontal, but a vertical current. Moreover, we are informed that they contemplate the manufacture of iron sponge in considerable quantities, for use in various metallurgical and chemical processes, securing the sponge in a cold state without reoxidation, and that in the apparatus designed for this purpose they have adopted the vertical current as being in that particular construction the more convenient of the two. The choice, therefore, between a vertical and a horizontal movement of the reducing gas is a matter of detail, governed by considerations of convenience in the construction and operation of each apparatus.

The Steel and Iron Improvement Company designate their system the "ore and pig open hearth process" as applied to steel manufacture, because it calls attention to the points both of similarity and of difference which it exhibits as related to the pig and ore process. Like the latter, the raw materials from which it derives its product are pig metal and iron ore in its native condition. Unlike the latter, which uses the pig metal as the leading, the ore as the subordinate ingredient, the new method uses the ore as the larger, the pig metal as the lesser, contributor. In the pig and ore process the ore is charged direct into the bath of pig, and its function is to desiliconize and decarbonize the iron. In the ore and pig process the ore is charged into a separate chamber, where it is deoxidized; thence it is dumped into the bath of pig, the function of the latter being to dissolve the spongy iron and mingle it with itself in



THE ADAMS REDUCING FURNACE.

one homogeneous body of liquid iron comparitively low in silicon and carbon, and hence capable of being quickly desiliconized and brought to the carbon point desired.

COST OF THE DEOXIDATION OF THE ORE.

It is claimed for the ore and pig process by its promoters that the cost of the iron sponge as delivered into the bath of the open hearth furnace is no greater than that of the raw ore, an apparent engima which they explain thus:

The three items of expense are (1) the maintenance of the apparatus, including interest on the first cost; (2) the labor, and (3) the fuel. The first cost of the apparatus is from $3000 to $5000 for a 20-ton open hearth plant. Allowing the same number of heats as in ordinary practice—say 12 per week—240 tons, which may be put at 200 tons general average, making, say, 10,000 tons per annum, and reckoning 20 per cent per annum on the first cost, or, say $1000 per annum, we have 10 cents per ton for this item of expenditure. It may be objected that if we allow 5 per cent. for interest, we have but $750 per annum for maintenance. But this is an excessive estimate. There is nothing beyond a red heat in any part of the deoxidizing apparatus, and nothing to wear out except very slowly. As regards the first item of cost, therefore, we can find nothing beyond 10 cents per ton.

The next element of cost is the labor. In the new process, the labor involved is that of placing the ore in the reducing chamber, regulating the valves of the reducing apparatus, and dropping the bottom of the chambers to discharge the ore into the open hearth furnace. All of this labor is performed by the ordinary staff of the open hearth furnace with more ease than the handling of the scrap, &c. This is when natural gas is used. Where the gas is generated in producers, there must be added to this the labor necessary for the production of the gas required for the reduction process.

The third item is the fuel. The extra quantity will be that required to maintain a red heat in the reducing furnace.

It is claimed that there is an ample offset to all of these expenses in the fact that owing to the greater fusibility of the spongy iron, the open hearth furnace can turn out three heats with it in the same time that it now yields two heats; in other words, gives 18 heats per week instead of 12. Referring now to the fuel question alone, aside from any other economies realized by this increase in the output, it is manifest that the total fuel per ton of ingots will be much less under the new system than under the old; the increase in work per ton to be performed being in red heat, the decrease in steel melting heat, and that the saving in fuel will cover the expenses of the maintenance of the reducing apparatus also.

It will be seen from this explanation, made by the promoters, that the claim that the cost of the wrought iron, delivered into the bath of the open hearth furnace, should be reckoned as no greater than that of the crude ore, rests upon the increased output of the open hearth furnace when working on the ore and pig system as compared with the customary output under the system ordinarily pursued at present. As this acceleration of the open hearth process is partly due to the improvements over the Indianapolis apparatus introduced for the first time in the Park furnace, the Steel and Iron Improvement Company say that their experience in actual working has been too short to justify them in claiming absolutely to make three heats for two, and that, so far as their experience has gone, it points to that result. The claim is therefore to be understood as intended to signify nothing more than a statement of what it is expected to establish by more extended practice.

RATIO OF WROUGHT IRON TO PIG.

As the wrought iron, according to the new system is cheaper than the pig by so much as it costs to convert the ore into pig, it is plain that, other things being equal, the larger the ratio of ore to pig the better. But there must be some pig in order to provide the initial bath.

At Indianapolis the reducing apparatus was separate altogether from the two open hearth furnaces (18 tons each), which it supplied with the wrought iron part of their stock. Owing to questions of convenience connected with the delivery of the iron sponge out of the reducer and into the open hearth furnaces, no attempt was made to increase the ratio of ore to pig beyond equal parts of pig and of metallic iron in the sponge. All that was learned in the Indianapolis working, therefore, was this: That there was nothing in the operations to indicate that a decidedly increased ratio of ore to pig could be used if it could be got into the bath promptly at the time the bath was ready for it.

At the Black Diamond Works the iron sponge being constantly ready and at command by simply pulling a lever, the opportunities are complete for working out the problem; but, owing to the very limited time since operations began, and the interruptions due to imperfections in the open hearth arrangements which have had to be corrected, nothing has as yet been been positively ascertained beyond the fact that there is no difficulty whatever in working with 1 of pig to 2 of wrought iron. But much that is suggestive beyond this has already been developed. Until the Pittsburgh work was started it remained an open question whether the working of a heat would be accelerated or delayed by using a large proportion of pig. It has now become evident that when the sponge is dropped into the bath it is, owing to its bright red heat and its cellular structure, so readily melted that this fact, in connection with the other fact that a bath of metal composed largely of wrought iron requires much less time to bring it to the desired carbon point than a like bath composed largely of pig, renders it certain that the pig is not desirable for quickening the process, and the problem of the ratio of it to be employed is reduced to the single question of what amount of pig should be used for the purposes of the initial bath. The indications point to a ratio of from 1 of pig to 3 of iron in the ore, to 1 of the former to 4 of the latter.

THE APPARATUS AND ITS OPERATION.

The accompanying drawings show the construction of the furnaces now in use at the Black Diamond Works. Within the walls of the furnace are built four upright reducing chambers, arranged in two pairs set side by side. These chambers flare downwardly from the top to the bottom, so as to permit of the easy withdrawal of the ore and to prevent scaffolding. At opposite sides of each of the chambers are checker work chambers which open into the reducing chamber, and are provided with horizontal partitions for the purpose of directing the gas back and forth through the ore in horizontal passes and for equalizing the temperature of the gas. At the outer end of each of the reducing chambers is a gas inlet flue, at one end of which is a gas supply pipe, while the other end of the flue communicates with the checker work chamber. Each gas flue is provided with partitions which cause the gas passing through it to travel in a circuitous course. On each side of the gas inlet flue is a draught flue. These draught flues at each end of the furnace communicate at one end with a stack flue and at the other end with the last checker work chamber of their respective reducing chambers. The draught flues are provided with air inlets controlled by valves, through which air may be admitted to burn with the waste combustible gas passing through. Each of the reducing chambers has a hopper at its top for the introduction of a charge of ore, and these hoppers are closed by suitable doors or valves in order to exclude air from the chambers during the reduction of the ore. At the bases of the chambers are metal doors lined with fire brick, which are so pivoted as to serve as drop bottoms. Below the chambers is a metal chute to receive the reduced ore or sponge from the reducing chambers preliminary to its passage into the open hearth furnace, into which a conduit made of black lead leads. The top of the conduit is closed by a fire-clay tile damper, which prevents the radiation of heat from the open hearth furnace. In the operation of the apparatus all of the reducing chambers may be used at once, or any one or more of them separately from the others. This is of advantage, since it permits the use of the furnace to suit all requirements of operation of the open hearth furnace and affords facilities for continuous operation and repairs, which would not be possible in the use of a single large reducing chamber. The general operation of this furnace will be understood after an inspection of that formerly described, the construction in both cases being founded on the same principle. Without going into details we may say in general terms that there are four chambers set above the open hearth furnace, and surrounded by the necessary arrangements for saturating the ore with red hot natural gas, while completely excluding the air therefrom. Into these chambers the ore, in quantities sufficient for a single heat in the open hearth furnace, is charged, the time of charging being so regulated as to insure a thorough deoxidation of the ore before it will be needed in the bath. Experience shows that for the ore now in use—compact, non-specular, red hematite from the Minnesota mine, Lake Superior—one hour is amply sufficient to give the desired reduction. The pig iron for the bath is charged into the hearth of the molting furnace as usual and brought to a molten state, and into this liquid bath there is charged from time to time, as each previous charge is melted, the contents of one of the four reducing chambers. Everything goes on according to the ordinary methods of an open hearth furnace working pig and wrought iron, the sole difference being that the wrought iron is dumped in four separate masses through the roof, instead of being thrown in piecemeal and by hand through one or more doors.

WASTE.

Since the percentage of loss is greater in the wrought iron than in the pig, it is obvious that an important factor in an estimate of the yield of ingots from a given weight of stock charged is the ratio of wrought iron to pig in the composition of that stock. So long, therefore, as this ratio remains undetermined, the question of yield must continue unsettled. But there is another circumstance which contributes still more largely to this uncertainty; to wit, the fact that there has not yet been had experience in actual working sufficient to warrant a positive statement as respects the loss of the iron contained in the sponge. Taking the actual results thus far as a whole, they indicate that, with not less than one-fourth pig iron in the total charge, an estimate of 12½ per cent. loss on that charge will be found to exceed rather than fall short of the facts.

COST.

Taking the average of ordinary open hearth practice, we estimate the cost of

manufacture, exclusive of the cost of the stock, at $8 per ton of ingots turned out.

The elements of difference between the operating expenses of the ordinary open hearth system and that of Adams are, as already stated, these: Extra cost to the latter in the fuel, labor and maintenance, as regards the reducing apparatus, and advantage to it in respect of its increased output. It is manifest that we cannot adopt the rough and ready reasoning that if, under the old practice, two heats of 20 tons = 40 tons, cost $8 per ton = $320, then three heats, or 60 tons, should cost $320 ÷ 60 = $5.33 per ton. There are items in the $320 of daily expenses, such, for example, as the labor of handling 60 as against 40 tons, that will not remain the same under the new system as under the old. Again, we have seen that though the item of fuel and maintenance do not count for much, they must assuredly be counted as something On the whole, taking into consideration the small extent of actual experience yet had as a warning to leave a margin for disappointments, the parties interested placed this item at $7.50 per ton.

At the same time it is to be borne in mind that the expenses of open hearth practice are certain to be greatly reduced if the scale of operation is so much enlarged that a common casting pit for a range of melting furnaces can be substituted for the present arrangement; in fact, this reform has already been introduced at the new Homestead Works of Carnegie, Phipps & Co., where a single crew of casting pit men pour from the ladle and deliver the ingots from 16 melting furnaces of 20 tons each. While, therefore, $7.50 per ton has been adopted for this item of cost, it is regarded as being not only a large allowance, but capable of material reduction hereafter.

For the Pittsburgh district the figures stand as follows: Ore is taken at 12 cents per iron unit, and the cost of converting the ore into pig, as given in our article on the subject in our issue of March 7 last, at $7.69 per ton. The price of muck bar is not that of the market, but is arrived at by adding $11 to the cost of the puddling operation to the cost of the pig. Steel scrap is taken at our lowest quotation of September 10, say $21.50 per ton.

1. As regards really fine quality steel the present practice is to employ material such as foreign pig, or pig from foreign ore, exceptionally low in phosphorus, wash metal, &c., which bring up the cost of the material to $33 per ton, or:

For enough to make 1 ton of ingots with 7 per cent loss	$35.47
Other expenses	8.00
Cost of 1 ton ingots, high quality	$43.47

2. *Present Practice. Average Soft Steel.*

1204 pounds pig, at $19.69 per ton	$10.58
1204 pounds muck bar at $30.69 per ton	16.50
2408 (loss on charge 7 per cent).	
Other expenses	8.00
Cost of 1 ton ingots	$35.08

3. *Present Practice. Common Quality.*

1204 pounds pig, at $19.69 per ton	$10.58
1204 scrap pig, at $21.50 per ton	11.55
2408 (loss on charge, 7 per cent).	
Other expenses	8.00
Cost of 1 ton ingots	$30.13

Adams' System.

853 pounds pig, at $19.69 per ton	$7.50
1707 pounds sponge iron, at $12 per ton	9.15
2560 pounds (loss on charge, 12½ per cent).	
Other expenses	7.50
Cost of 1 ton ingots, fine steel	$24.15

Showing a difference in favor of Adams' system of $19.32 per ton in the manufacture of high quality steel; $10.93 in the manufacture of the general run of soft steel, and of $5.98 for inferior grades.

PHOSPHORUS, SULPHUR, SILICON AND CARBON.

The subject of the relations of the ore and pig open hearth process to these metalloids naturally divides itself into two line of inquiry: (1) as to the results of the process in respect of the content of phosphorus and of sulphur which it leaves in the steel; and (2) as to the effect of the phosphorus, sulphur, silicon and carbon on this kind of steel. Upon the first of these points it would appear that there has as yet been too little opportunity of studying the phenomena relating to sulphur to justify any conclusions.

As regards phosphorus, on the contrary every heat made contributes more or less light. What has already become manifest is this: That since the phosphoric acid in the ore is not reduced when the iron oxide is, but, contrariwise, drops down into the bath and melts into the slag, it will pass away with the slag if the latter be immediately tapped off; but that if time is given, sufficient deoxidation takes place and the phosphorus is incorporated with the steel. The greater or less degree to which the phosphorus is retained, therefore, depends upon the greater or lesser rapidity and completeness of the removal of the slag. As an example of excellent practice we have been shown the record of a heater in which the pig (one half the charge) analyzed 0.10 in phosphorus and the ore (other half of the charge) gave 0.18 phosphorus in the metallic iron contained; while the steel produced showed phosphorus 0.055. Thus only 0.005 of the phosphorus of the ore was retained, 0.175 of it having gone off in the slag, the 0.05 being accounted for by the pig. On the other hand, where the slag is allowed to remain, as is customary in ordinary practice, until the steel is tapped out, the whole, practically, of the phosphorus is found to have gone into the metal. Taking the experience at Indianapolis as a whole, with about 1,000 tons in all of metal, the pig iron showing an average of 0.1045 phosphorus, the ore being Ludington Stone, with 65 per cent. iron and 0.12 phosphorus, or equal to 0.18 phosphorus in the wrought iron from the ore; hence 0.14 phosphorus in the mixture, the results run from the lowest, namely, that just cited, 0.055 phosphorus to 0 123 phosphorus in the highest:—a reduction of phosphorus in every heat made. Observe also that a non-Bessemer ore (having 0.12 per cent. phosphorus equal to 0.18 in the pig) produced good steel, as will be seen by the physical tests of Indianapolis steel presented below.

Coming now to experience with stock low in phosphorus, the following data are presented: One heat at the Park furnace, from stock averaging 0.0525 phosphorus showed 0.042 phosphorus in the steel. The next following heat, from stock averaging 0.048 phosphorus showed 0.032 phosphorus in the steel.

Upon the second point—to wit, the effect of phosphorus, sulphur, silicon and carbon on steel made from materials which, to the extent of one half or over, have not passed through the blast furnace—much has already been accumulated to confirm an impression previously prevailing among some steel makers that direct process steel could "carry" a much larger infusion of all these metalloids than steel made from pig, no matter by what intermediate process. Evidence on the subject began with the very first heat of steel ever made under Adams' system. The sponge was made in a columnar mass, in a sort of kiln, and the operation was inaugurated by filling the reducing chamber with coke and burning it there, in order to heat up everything; and as the column of coke settled the ore was charged upon its surface and gradually replaced it altogether. This coke being very sulphurous, it was thought best to be especially watchful of all steel made from sponge which had been exposed to sulphurous fumes of the underlying coke. The first heat of steel was made with such sponge, and was found to analyze 0.239 sulphur on testing; however, it worked perfectly tough under the severest tests for red shortness. Neither this amount of sulphur, nor, indeed, anything at all approaching it, has ever since been found in any of the steel, nor has any indication of red shortness been discovered in any trial of it.

From one heat of the following analysis, carbon, 0.19; silicon, 0.051; manganese, 0.77; phosphorus, 0.083; sulphur, 0.08, a bar 2 x ⅝ inches was hammered out and a ⅝ inch hole drilled in it, which was swaged out cold to 1⅛ inch without cracking.

From a lot tested by the Louisville Bridge and Iron Company a specimen of the following composition—viz., carbon, 0.18; silicon, 0.04; manganese, 0.46; phosphorus, 0.111; sulphur, 0.128 showed 72,100 pounds tensile strength, 52 per cent. reduction of area on a sample 1 x ½ inches. From another lot tested by the same company having the composition, carbon, 0.19; silicon, 0.098; manganese, 0.70; phosphorus, 0.114; sulphur, 0.115, a test bar 1 x ⅝ inch gave 68,500 pounds tensile strength, 50 per cent. reduction of area.

Three heats rolled, tested and analyzed by the Spang Steel and Iron Company, Limited, showed as follows:

1. Carbon, 0.13; silicon, 0.055; manganese, 0.60; phosphorus, 0.117; sulphur, 0.093, gave 60,000 pounds tensile strength, 36,000 pounds elastic limit, 25 per cent. elongation in 8 inches, and 52 per cent. reduction of area. Test bars taken from ⅝-inch plate.

2. Carbon, 0.16; manganese, 0.92; phosphorus, 0.085; sulphur, 0.075, gave 64,720 pounds tensile strength, 36,610 pounds elastic limit, 23¼ per cent. elongation in 8 inches, and 50.35 per cent. reduction of area. Fracture 45° and silky. Test bar, 0.406 x 1.460 inches.

3. Carbon, 0.21; manganese, 0.98; phosphorus, 0.114; sulphur, 0.08, gave 66,950 tensile strength, 42,570 elastic limit, and 20¾ per cent. elongation in 8 inches. Test bar ⅝ inch. It was defective, and the reduction of area could not be ascertained.

A highly interesting field for special investigation lies open for the future in the determination of the extent to which the hardening elements, carbon and silicon, may be increased in this kind of steel without too near an approach to the danger line as respects toughness.

Trade with Spanish America.

Numerous manufacturers in New York and vicinity have organized as an export and trading company, and are making a strenuous effort to extend trade with Spanish America. They call attention to the report of the South American commission appointed by President Arthur and quote approvingly from a petition to Congress, asking for the negotiation of commercial treaties, in which they say: "The condition of these treaties should be the free admission of such merchandise as this country does not produce, in return for the admission free, or under a favorable scheme of duties, of our products—the benefits of such exchange to apply only to goods carried under the flag of the parties to the contract, and the removal on both sides from the vessels so privileged of all tonnage dues and national imposts, so that those vessels may ply unhindered between our ports and those of other contracting parties, though without infringing on the reserved home coasting trade; the removal or reduction of burdens on the exported products of those countries coming

within the benefit of the treaties and the avoidance of the technical restrictions and penalties by which our intercourse is at present hampered." The manufacturers and traders referred to represent a wide range of industry, and their object is to renew efforts to secure legislation deemed necessary to the commercial welfare of the United States.

Embossing Press.

The illustration represents a machine recently designed by the E. W. Bliss Company, Limited, of Brooklyn, N. Y., for embossing medals, watch cases and similar work requiring great pressure. The machine embodies several novel features. In order to withstand the tensile strain of 1000 tons which is brought upon the body (that being the pressure the machine is designed to exert on the work), it is made of a solid wrought iron forging, the center of which is slotted out to accommodate the working parts. This wrought iron body or frame is securely bolted to cast iron housings at the rear, which carries the main crankshaft and driving mechanism. The mandrel on which the lower die rests is made of steel and has a vertical motion of about 1¼ inches. It is operated by toggle links made of tool steel, hardened and ground. The bearings of these links are cylindrical, being 2¼ inches diameter by 12 inches long. The toggles are operated by a wrought iron lever extending back between the housings, and the outer end of this lever is connected to the main crank by a powerful pitman. The crankshaft is a solid wrought iron forging 7 inches diameter, with crank slotted out, and is driven by a 6 foot gear, the ratio of gearing being 8 to 1. The driving shaft is supplied with a Hill friction clutch, with an automatic device recently designed by the Bliss Company, by means of which, when the treadle is depressed the clutch is thrown into operation, and when the main gear has made one revolution the clutch is automatically thrown out and a brake applied, thus stopping the machine.

In order to obtain the necessary adjustment of the dies to regulate the pressure, a steel shoe is provided above the mandrel, to which the upper die is attached. This shoe is held up in place by four rods passing up to a yoke at top, and the weight supported by four large compression springs. The upper side of the shoe is made slightly inclined, and a steel wedge inserted between it and the bearing in the main frame. The position of this wedge is adjusted by means of a screw which passes through the side of the housing and which is operated by the hand wheel shown. The total weight of the machine is about 26,000 pounds.

Pressed Steel.—Considerable interest attaches to the operations of the Fox Solid Pressed Steel Company, of Joliet, Ill., the control of which has recently passed into English hands. They manufacture a special line of products in the form of pressed steel articles for railroad equipment, such as freight and passenger car trucks, brake beams, center plates, steam chest and cylinder casings, locomotive smoke box fronts, drip pans, running boards, &c. They have three large hydraulic presses, the largest of which weighs 450 tons. With this immense press, which has probably the greatest capacity of any in the world, they are enabled to exert a pressure of 4000 tons on the surface of a plate 11 x 26 feet, thus producing forms hitherto unattainable at one heat and one operation. The process is the patent of Samson Fox, of Leeds, England, founder of the Leeds Forge Company, and inventor of the Fox Corrugated Boiler Flue, as well as many other useful and ingenious inventions. The property of the company comprises 12 acres of ground, which is rapidly being covered by buildings required for their extensive operations. E. W. M. Hughes is the capable manager of the works.

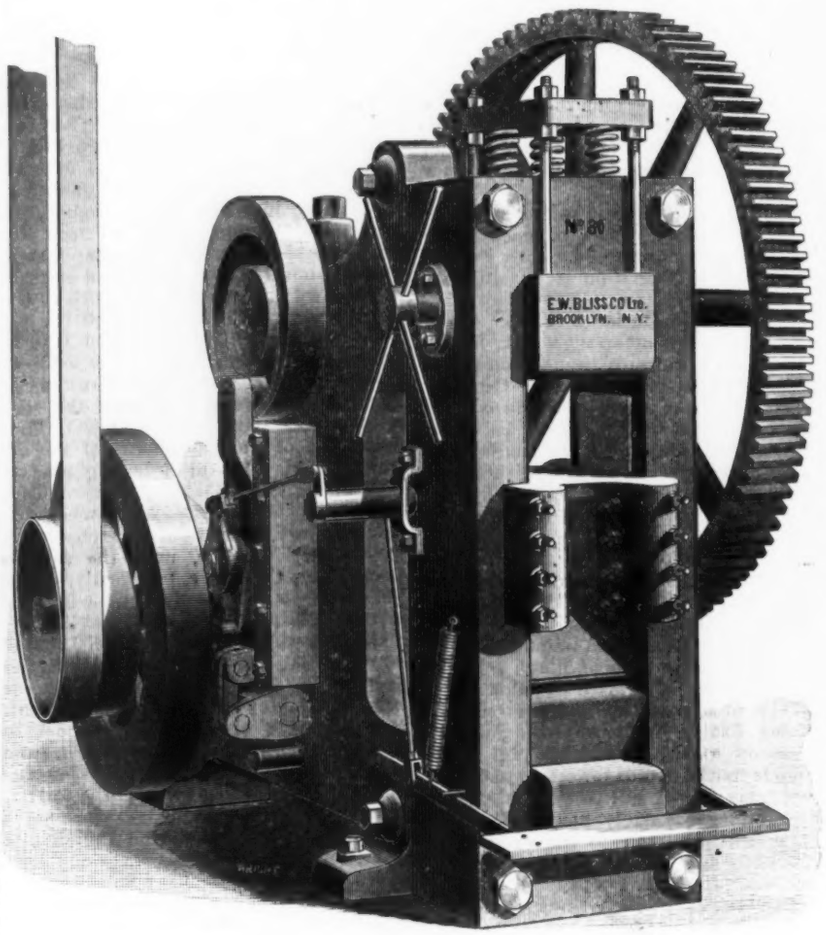
Some New Canal Projects.

By a rather noteworthy coincidence several new canal enterprises are just now asking attention. In New Jersey a ship canal from the Delaware River to the Atlantic Ocean is under consideration. Its object is to secure a shorter route for vessels from Philadelphia to New York than that which begins by going scores of miles in the opposite direction down Delaware Bay and doubling Cape May. The proposed cut would be across New Jersey, striking either Tom's River, in Ocean County, just above Barnegat, or else Shark River, still further north, in Monmouth County, between Asbury Park and Spring Lake. A cut of 60 or 70 miles would be necessary, but it would be an easy one to make, through a flat country, and with no rocks in the way. South Jersey as well as Philadelphia would reap whatever advantage there might be in the project, and accordingly the capitalists are now ciphering to find out whether the prospective tolls will justify the outlay.

A larger enterprise is mooted in the Keystone State, that of a ship canal to Lake Erie. The Pennsylvania Legislature appointed commissioners for this purpose, and the surveys have been substantially completed. The commissioners favor a route along Beaver River to the lake. Whether the State will be willing to enter into this project is a little doubtful, since the minimum rough estimates for it are understood to be at least $25,000,000, and very likely the cut would cost more.

The Dominion has a liking for canal projects. It has just concluded to build another waterway at Coteau, Province of Quebec, on the north side of the St. Lawrence, at a cost of $2,000,000, in order to get around the Cedar Rapids. There is now, on the south side of the river, a canal for this purpose, the Beauharnois, but it is found that the increasing grain trade from the West to the seaboard justifies a more capacious canal, and the old one can be utilized for water power.

The Dominion Government is now building a new canal at Sault Ste. Marie, the future importance of which is as clear to it as to our Government. Near by, a short canal, 50 feet wide by 12 deep, not intended for water power only, drawing its supply from Lake Superior, has been undertaken by private enterprise. Analogous to this latter scheme and to one of the same sort on the Michigan side, but incomparably more important, is the proposed canal for utilizing the water power of Niagara. Finally, there is the mooted canal, 67 miles long, from Georgian Bay, the eastern arm of Lake Huron, to Lake Ontario. Such a conduit would shorten by several hundred miles the distance by water between Chicago or Duluth and Montreal, because it would completely skip Lake Erie, as well as Lake St. Clair, St. Clair River and Detroit River, and take a short cut to the mouth of the Humber River, west of Ontario. A modification of this project contemplates the substitution of a ship railway for the canal, inasmuch as it is thought that the latter would cost nearly $25,000,000. But such a railway, also, must be very expensive both to construct and maintain in that region.

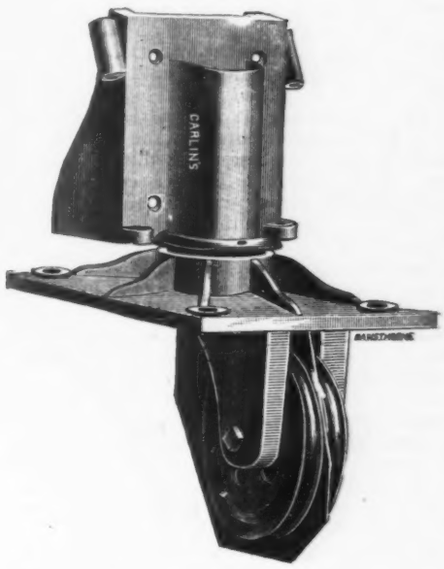


EMBOSSING PRESS.

Boom Derrick.

An advantage possessed by this derrick, which is built by Thos. Carlins' Sons, of Allegheny City, Pa., is that, when wire guys are used, the boom will swing around the entire circle. With the improved double sheave base and plate shown both the load and boom may be operated by power, which may be located at any convenient distance. By this means the radius or sweep of the boom may be changed while hoisting the load, thereby permitting the quick and accurate handling of the material. The way of putting the hog chains of the boom and mast has the advantage of supporting them in the center as well as bracing them sideways. The special half band overcomes the liability of "kicking" as is the case when a very long boom is used on a tolerably short mast, as is frequently done in handling sand, where the derrick is on a boat. The boom sheave guard prevents the hoisting rope from getting off the sheave and jamming in the mortise. The gudgeon pin is made large and has a spider casting fitted to it, this casting also fits the solid band on top of mast. This is an improvement over the old way, since by this means the strain on the pin is thrown on the band and there is much more bearing on the mast than the pin itself. The weather cap lies loose on top of the mast and prevents the water from getting around the gudgeon pin and spider. The guy cap is of cast iron, made with a groove somewhat in the form of a sheave, a heavy wrought iron ring being shrunk on when the guys are fastened around to this ring. The guys are attached to it by means of shackles or clevices and are generally galvanized wire rope with thimble spliced in them. The guy cap has a long bearing on the gudgeon pin, thus reducing the wear. This derrick may have the boom rope of manilla in place of wire rope, and the base is frequently made with one wire and one manilla rope sheave. The sheaves are invariably fitted with graphite self-lubricating brushes and work on polished steel pins. When desired the derrick can be operated by hand.

BOOM DERRICK.



DOUBLE SHEAVE BASE.

Steam on the Canals.

After a protracted trial steam canal boats have conquered prejudice and become established as indispensable to the equipment of the New York State canals. There are perhaps 100 such boats already in service, and each is capable of towing from three to five other boats. One of the finest of the steamboats—the John B. Dallas—is 96½ x 17½ feet, and was built last spring by Morgan Brothers, of Lockport. Its machinery consists of a 14 x 16 inch cylinder engine, fed from a large boiler built to stand a pressure of 140 pounds to the square inch. The consumption of coal from Buffalo to New York is about 45 tons, at $3 per ton for pea. She can herself carry 6100 bushels of grain, and can tow four other boats of 8300 bushels capacity each, making the total capacity of the fleet 39,300 bushels. With two boats in tow the John B. Dallas makes the trip between Buffalo and New York in a trifle over seven days, and with four boats in tow she makes it in about 10½ days. Under the old style of boating it requires six horses or mules to bring two boats from Buffalo to this city in 13 or 14 days. The canal boatmen claim that only for the faulty management of the canals steam would be practically the only motive power in use to-day. The commercial supremacy of New York, they urge, is dependent wholly upon the proper maintenance of the canals, and urge that they should be deepened to fully 9 feet.

Projectiles Electrically Welded.

Lieut. W. M. Wood, U. S. N., delivered a lecture before the Society of Arts Institute of Technology, Boston, in which he described the new application of electric welding to the manufacture of projectiles. We extract from it the following:

At the present moment it looks as though the projectile was about to gain another point over armor and become a still more important factor. Artillerists on shore are now directing their attention largely to the use of breech loading rifled howitzers or mortars. These guns are fired at a great elevation, rarely less than 45° and frequently at 60°. The projectile has, consequently, a high curved trajectory and plunges down on and through the decks of vessels or behind parapets. The decks of men of-war are frequently not protected at all, except over the engines, boilers and magazines, where a curved armored deck is used with a maximum thickness of from 4 inches to 6 inches. Four inches is the greatest thickness of the curved protective decks of our new cruisers and is the only armor those now afloat have.

The varying ranges of these howitzer thrown projectiles are given by increasing or decreasing the weight of the powder charge. In some recent experiments made by Krupp, in Germany, very satisfactory results have been obtained by projectiles thrown from this class of gun against horizontal targets representing the armored decks of ships. The defenses of Boston and our other seaboard cities are to comprise a large number of guns of this class. They fire both armor piercing and common shell. Redoubts and turrets on shore can be armored as heavily as you please, or guns and troops can be defended by that most excellent protection, the earthwork. Afloat, however, where every pound carried is a matter of serious consideration, the problem is a very different one, and the weight of armor must necessarily be limited by the size of the vessel. A proper navy, however, will always be made up of a number of vessels of various kinds, more or less dependent

on each other, from the gigantic battle ship fully protected by the heaviest armor down, including the partially protected cruisers, fast unprotected vessels, dispatch boats, converted merchantmen used as commerce destroyers or transports, torpedo boats, &c.

Troops in the field are like the unarmored cruisers, torpedo boats and converted merchantmen, practically unprotected. For use against these various defenses and where there are no defenses except distance and advantage of position there are in use three general classes of projectiles (not considering the more or less experimental dynamite and other high explosive shells). They are, 1, the armor piercing shell, used solely, as its name indicates, against heavy armor; 2, common shell, used against unprotected vessels and troops, for bombarding cities and earth works, for target practice, &c.; 3, shrapnel, so named from its inventor, extensively used in field operations on shore against bodies of troops and at sea against open boats, topedo boats or any unprotected body of men.

Leaving the ordinary bullet of the shoulder rifle out of the question, these projectiles range in weight from those of a single pound to the gigantic missiles of the 110-ton gun, which weigh about 1 ton and are driven by almost ½ ton of powder. Now, in order to show how much is gained in the construction of projectiles by the Thomson electric welding process, I will briefly describe the present methods of manufacture:

First comes the armor piercing shell. To fulfill the Government requirements these must be made of a fine quality of steel, capable of being made very hard and still be tough. In the first operation it is forged or rolled into a rough solid blank. After this it is placed in a lathe and turned off accurately on the outside, and the powder chamber bored in the axis of the shell from the base, as in this specimen. This opening is then closed by a carefully fitted screw plug, in the center of which is a smaller threaded hole into which fits the percussion fuse which explodes the shell on impact. A groove is now turned in the outside near the base and knurled or roughened. This is for the copper rotating band, and the roughening is to prevent its slipping when the copper enters the rifling of the gun. Next the shell is hardened by one of the various processes, which are more or less satisfactory, and finally the copper band is forced into place by hammering or hydraulic pressure and turned off true to gauge. This completes the projectile, and you will readily understand that all of this work is slow, tedious and expensive. Any one who is familiar with the operation of machining high carbon or tool steel will appreciate this. As a matter of fact, a 6 inch armor piercing shell which only weighs 94 pounds costs in the neighborhood of $65 or $70.

Next come common shell. These at present are cast either of steel or iron, but even in this cheap form of production many difficulties are met with. In the first place, the shell usually has but one small opening to the inside powder chamber, and this only allows the use of a single "print" to hold up the core which forms the interior cavity; consequently when the molten metal flows in it pushes this core out of place, and the resultant casting is eccentric—thin on one side, thick on the other—frequently so much so as to cause it to be discarded entirely. When the castings are received from the foundry they are first carefully calipered on the inside by a skilled operator, who uses a delicate instrument called a "star gauge," which expands within and enables him to determine the amount the casting is out of true, which he marks on the shell. It is then passed to the hands of the machinist. He is obliged to place it in his lathe eccentrically, so that the outside will be turned true with the inside, and you can imagine that even after all this care they are never perfectly concentric. Another serious difficulty met with in the cast projectiles is the liability to small blow holes or porosity, which, though they sometimes escape detection, always cause the rejection of the projectile when discovered. Through these holes the gases of the charge might be driven and thus cause a premature explosion of the shell in the gun. Steel shell of this description, of 6-inch caliber, cost about $30 each. Like the armor piercing shell, they are fitted with rotating bands and fuses, but are not hardened.

We now come to the shrapnel. It was originally invented for use in the smooth bore guns of the past, and was then a hollow sphere filled with small bullets, around which was poured melted sulphur as a matrix. A small powder chamber for a bursting charge was left in the middle. It was provided with a time fuze which could be set so that the shell would explode at the desired moment in its flight, scattering its contents and fragments in the face of the enemy. So far there seems to have been no very satisfactory shrapnel made for rifle guns. The difficulty is that the head or base has to be screwed on after the body of the shell has been filled with the bullets and matrix. This construction weakens the projectile very much at this point, and the head or base is apt to blow out without bursting the body of the shell or scattering the bullets, especially as the walls of the projectile have to be made thick enough to stand the threading.

Hoping I have now made clear the general state of the art, I will explain wherein this new process differs, and will endeavor to illustrate it by the specimens I have here.

First, instead of the solid, rough forged ingot, we have these three component parts, which, when welded together, will form a 6-pound armor piercing shell. Each piece is now finished to exact size, except that there is a little extra length to allow for the take up in welding. The head and base pieces are forged in dies to shape; the central portion is simply a piece cut from a length of solid drawn steel piping. It has all the additional strength due to the fibrous skin inside and out caused by the drawing process. To join these three pieces they are clamped into a form of electric welding machine designed for the purpose, and in less than a minute are joined together and made a homogeneous mass like this.

It only now remains to grind off the two burrs which you see in this specimen and cut in the groove for the rotating band. The front one of these burrs may be used to form an enlargement used in many forms of projectiles, called technically a "bourillet." It supports the front portion of the shell in the bore of the gun, the remainder not touching except at the rotating band. The other burr may be removed at the same time the rotating band groove is cut. The fuse hole has already been cut and threaded in the base piece. The shell is now ready for the hardening process. I wish to call attention here to the fact that the burrs are allowed to remain on the inside and thus form strengthening ribs, which help materially to support the shell against the great crushing strain it receives on impact. You will see that we have thus formed a stronger and better shell with a minimum of labor on the individual parts and a few seconds' work to join them together.

In order to illustrate the wonderful strength that may be gained by this welding process, I have here a shell which was constructed exactly as I have shown. It was fired through a 3-inch plate of iron at the Naval Proving Grounds, at Annapolis, recently. You will see that it has not changed its shape in the slightest degree, nor has it even lost the copper rotating band which was carried through the hole with it. Here is another which shows a still more remarkable result. This projectile was fired against heavy steel armor, which has a resistance of about 75 per cent. more than iron and which was much heavier than a projectile of this size could be expected to perforate. It, however, penetrated 5 inches, and then, owing to the elasticity of the oak backing of the plate, was thrown back about 30 feet, as perfect in condition as before it was fired from the gun. The experience of the welding company has been that the metal seems to be strengthed at the point of welding, and this certainly seems to justify the supposition.

After accomplishing results like this you will see that the manufacture of the common shell becomes a very simple matter. By the welding process it is quite feasible not only to join iron to high carbon steel, but to weld wrought iron or steel to steel castings or even to cast iron. Hence, in this case, it is only necessary to substitute common iron or low carbon steel tubing and stamped or cast heads and bases and perform the welding operation. The shell which is thus cheaply put together has all the advantages of wrought and none of the disadvantages of cast metal. If made of low steel, it may even be hardened to a certain extent, and thus have more or less efficiency against thin armor.

In regard to the shrapnel, a single look at this section will show the problem and how it has been met. This is from a design for the United States army 3.2 inch field piece. The head and base are steel castings, which have been heated and compressed to give them density. The body is drawn steel tubing ¼ inch thick. The projectile was built as follows: First the head was welded on to the body. Next the brass tube which carries the flame from the fuse to the powder chamber at the base was crimped in at the upper end. The half formed projectile was then inverted and the bullets placed within and the matrix poured about them. Next the diaphragm which forms the front end of the powder chamber was put into position and the other end of the tube crimped in. The shell is now ready for the final weld, and you will notice that the base piece is provided with a shoulder, which after the weld is made will press closely upon the diaphragm and support it against the shock of the discharge. After the second weld is made the shrapnel has an unbroken surface inclosing its deadly bullets, and, like the other shell, is ready to be fitted with rotating band and fuse.

To summarize, these shells can be produced in the method I have described, so that a wrought steel projectile can now be manufactured at less cost than a cast iron one, which, except for target practice, is almost worthless; and as for armor piercing shell or even molded steel shell, there can be no comparison as to cost of production. This same principle can also be applied to solving a still more difficult problem, and one which has hitherto baffled the skill of the inventor—viz., welding the solid heads on to the large brass cartridge cases now used with the projectiles of rapid fire guns. A rapid fire gun is one having a non-recoil and pivoted mount. It is aimed and fired from the shoulder like an old fashioned swivel. They range in size up to as large as the 6-inch gun. The ammunition is fixed just the same as the bullet and cartridge of a shoulder rifle. At present these brass cases are constructed with great difficulty and at much expense by drawing up from the solid ingot, and no one is prepared to make those of the large sizes in this country. By the Thomson process, which also welds

brass and copper, this will be an easy matter, and the cost should be less than one quarter that now paid by the Government for those they are obliged to import.

In conclusion, I will say that it is a well known fact among ordnance experts that the breech mechanism and the principle of the construction of the present high powered guns are entirely due to American invention, which was, however, forced out of the country by lack of appreciation and was taken up and developed in Europe. I believe the day has come at last when our military inventors will not have to seek their encouragement entirely abroad, and I think that in the very near future our Government will be supplied entirely by cheap and effective projectiles of the kind I have shown you to night.

Pile for Manufacturing Bar Iron.

William P. Hopkins, general manager of the Slatington Rolling Mill Company, of Slatington, Pa., has recently patented the pile for manufacturing bar iron of

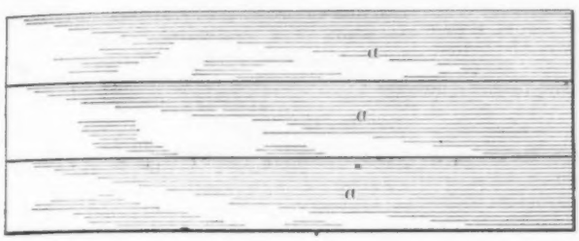


Fig. 1.

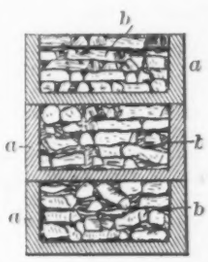


Fig. 2.

PILE FOR MANUFACTURING BAR IRON.

which we herewith present drawings. The object aimed at is to produce refined guide iron of the best quality at a minimum expense and at the same time utilize waste scrap iron. The usual method of manufacturing bar or guide iron is to first roll the scrap or puddle ball after leaving the squeezer into flat "muck" or scrap bars. Then cut these bars into shorter bars, then pile these cut bars and reheat them to a welding temperature, and finally roll these piled bars while hot into any desired shape or length. This method is obviously expensive and cumbersome. In the method here illustrated the puddle ball is rolled directly into channel iron and the channels *a a* are then piled one upon the other to a suitable hight to suit the bar intended to be made, each channel being filled with waste scrap iron, *b b*, as shown in the sectional view, Fig. 2. The pile thus formed is reheated to a welding temperature and passed through rolls for the purpose of reducing it to the desired shape and size. By forming the bars channel shape and piling them one upon the other, as shown, a solid pile is formed and all dirt excluded from the scrap iron. It is claimed that by this method a saving is effected in the cost of production of the iron.

It is stated that one of the most prominent natural gas companies in Pittsburgh are making arrangements to increase the pressure of gas in their mains by the use of pumps to force the gas through. It is said that indications point to the success of the experiment.

A branch road just purchased by the Reading in Lehigh County, Pa., gives access to a number of blast furnaces controlled by the Crane Iron Company and the Thomas Iron Company, and runs through a section containing numerous banks and mines.

Precautions Against Freezing.

The Boston Manufacturers' Mutual Fire Insurance Company have issued a special circular which deals with the methods of avoiding damage by freezing. Not only is a large amount of damage done to fire apparatus by freezing, but there have been numerous instances in which cold weather has interfered with proper action of some portions of the apparatus, and these difficulties would have been to a large extent avoidable.

It is not that the damage caused by frost may be limited to the portion of the apparatus injured, but in many instances breakages of this nature affect the whole fire protective system, and in some instances sufficiently to prevent its efficient use.

In the course of this precautionary work for the winter, all hydrants and valves should be carefully examined and oiled, preferably with a heavy mineral oil which will not corrode the brass. All hydrants on standpipes and all Y or branch hydrants should be opened after the pipes are emptied, to let out any entrapped water which may have leaked past the valve when the pipes were full, care being taken that the drip valves of the post hydrants are in good condition. The rotary pumps should be oiled, and, if exposed to freezing, turned backward to empty them of water. The pipes exposed to freezing should be emptied, care being taken that the water should be let out from above the check valves, and that all persons who are in charge of such apparatus should know that the gate and drip valves are in order. The drip valves should be marked by an arrow showing the proper direction to open them.

At the last inspection trial of the fire apparatus, the hydrant houses should be looked into and arranged for the winter, attention being given to any lanterns kept hanging there ready for use, and, if necessary, make any changes so that the doors of such hydrant houses cannot be readily obstructed by ice.

If there are any automatic sprinklers in places liable to freezing, and which cannot be kept warm, the petcocks should be opened after the main valve is closed, and the water drawn off at the drip pipe very slowly, in order that the sprinklers should not be rendered liable to leakage by a sudden change of pressure upon them; this may happen if the water is drawn off rapidly.

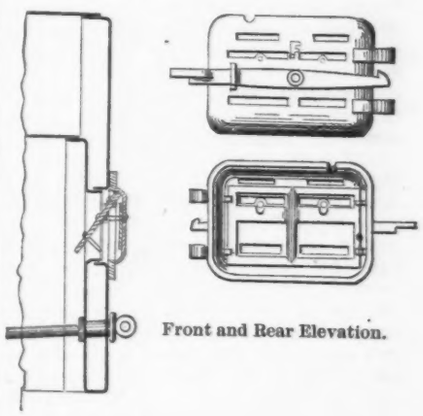
When it is necessary to close any sprinkler valves in this manner, it is important that every member of the fire department of the mill should be made aware of the fact that these valves are closed and that it is necessary to open them to provide for the operation of the automatic sprinklers in time of fire.

The valves to automatic sprinkler systems are frequently reported by the inspectors as shut when they should be open, and were believed to be open. Every valve to automatic sprinklers which is to be kept open should be secured in such a position by a leather strap—not a chain—passing around the pipe and one of the spokes of the hand wheel of the valve, the ends of the strap held together by rivets or padlock. It is preferable that this strap should be loose enough to permit the hand wheel to be moved half a turn, in order that the valve may be turned fully open at any time. It is recommended that such valves be kept a quarter to a half turn from being full open, so as to render inspection possible without removing the strap.

On new sprinkler installations it is recommended that all valves should be provided with an indicator showing whether they are open or shut.

Door for Boiler Furnaces.

This door is so constructed as to direct currents of air, or air and steam may be directed, toward and caused to commingle with the gaseous products of combustion in the furnace, the object being to effect more thorough combustion. It has been used on some of the engines of the Pittsburgh division of the Pennsylvania Railroad, with very good results. Through the door, which is hinged to the boiler in the usual way, are formed openings, through which the flow of air is regulated by means of a sliding plate arranged in suitable guides on the rear side. The plate is formed with slots to register with the door openings. In order to prevent the air from passing directly through the fire box and into the tubes or flues a deflecting plate is attached to the inner side of the door, and is placed at such an angle as to deflect the air upon the flame at or near the surface of the fuel. The plate is so hinged as to be parallel with the door when the latter is open. When the door is applied to locomotives the rapid exhaust of steam when the engine is running will draw sufficient air into the fire box. In order to provide for the introduction of air when the locomotive is stationary, or when the door is applied to stationary boilers, a pipe leads from the boiler, or from a suitable air supply, such as the air brake reservoir, to the space between the deflecting plate and the door when the latter is closed. The air thus drawn in by the air or steam blast will be properly directed into the fire box. This door is the invention of J. R. Alexander, of Pittsburgh, Pa.



Front and Rear Elevation.

Vertical Section.

Door for Boiler Furnaces.

The Great Northern has placed an order with the Baldwin Locomotive Works, of Philadelphia, for 50 locomotives, to be used on the Pacific Coast extension.

The Manufacture of Connellsville Coke.

During the recent visit of the members of the British Iron and Steel Institute to Pittsburgh, an excursion to the Connellsville coke regions was tendered them under the auspices of the H. C. Frick Coke Company. The visitors were presented with a little book entitled "Connellsville Coke," in which the manufacture of coke is described in the following interesting manner:

Coke was made in this country 73 years ago, but it was not until 20 years ago, or after the worth and superiority of Connellsville coke had been practically demonstrated and its development commenced, that the industry attained an importance and magnitude to even entitle it to a name. At the present time coke is manufactured to a greater or less extent in 18 States and Territories of the Union, but the Connellsville region in Pennsylvania stands out not only pre-eminently as to production, but in point of quality as well. The superiority of Connellsville coke over all other cokes produced in this country for blast furnace and foundry use is conceded and acknowledged everywhere, and the reports of the census of 1880 show that this region produced 72.16 per cent. of all the coke manufactured in the whole country, which shows its relative standing in point of magnitude.

As an evidence of the importance of the industry, it is only necessary to state that Connellsville coke has built up the great pig iron industry west of the Allegheny mountains, and it is an historical fact that Allegheny County, Pa., a county which to-day is the great pig iron center of the country, did not have a successful coke pig iron furnace within its borders until it got its supply of coke from the Connellsville region.

This remarkable coal vein, from which Connellsville coke is produced, is of limited area, and extends a distance of about 50 miles from a point near Latrobe, on the Pennsylvania Railroad, in a southwesterly direction through Westmoreland and Fayette counties, almost to the West Virginia State line, with an average width of two and one-half miles, covering an area of 125 square miles, and, excluding barren measures, originally contained about 72,000 acres, of which there are yet about 60,000 acres unmined. The coal is very clean, almost entirely free from slate, remarkably soft, easily mined, uniform in quality and thickness, at an average of 9 feet. Its purity and its chemical and physical characteristics make it peculiarly adapted for coking; and the comparative cheapness of mining it is what gives it such great value and makes it possible to put coke from that district in competition with other cokes and fuels in distant parts of the United States and in foreign countries. An average analysis of the coal gives the following results:

Water	1.260
Volatile matter	30.107
Fixed carbon	59.616
Sulphur	0.784
Ash	8.233
Total	100.00

The average miner digs and loads 8 tons of this coal in nine hours, and, singular to say, during the last 15 years the average price of Durham coke has been about double the average price of Connellsville coke, and the average earnings of the miners and cokers in the Connellsville region in the same time are about double the average earnings of the miners and cokers in the Durham district. In round numbers there are 16,000 ovens now in the region, the aggregate of 80 different plants. The smallest, the Great Bluff, of E. A. Humphries & Co., 16 ovens; the largest, the Standard, of the H. C. Frick Coke Company, 907 ovens. The ovens are supplied with coal from 83 mines, 37 being drifts, 29 slopes and 17 shafts. The latter vary in depth from 50 to 542 feet. the slopes vary from 180 to 4000 feet horizontal depth, and some of the drifts extend over 1¼ miles underground. The wagons used in the mines for carrying the coal range in size from 34 to 60 bushels capacity, and the iron larries used for conveying the coal from bins to the ovens have a capacity of from 150 to 200 bushels. Both the wagons and the larries are generally drawn by mules and horses, but at larger plants wire rope haulages have been introduced for transporting coal underground, and small locomotives are used on the ovens for hauling the larries.

The prevailing system of mining is what is known in this country as the doubled headed pillar and room system, and it is estimated that about 90 per cent. of the coal is recovered. The roof is only fair, the bottom generally good, but in some cases a soft fire clay bottom is found. The rooms are run 12 feet wide and pillars 15 feet. The drift mines are all opened from the outcrop, and are self-draining. The shaft and slope mines are all pumped by compressed air or steam. The fan is the favorite means of ventilating. The beehive ovens are used exclusively, and are built in single rows, or what are termed bank ovens, and in double rows, termed block ovens They vary in size from 10 feet 6 inches to 12 feet in diameter, and from 5 to 7 feet high. The standard oven of the region to-day is the ancient beehive oven, with a very little improvement other than increase in size, and is made 12 feet in diameter and 6½ feet in hight. The fire brick used in construction of ovens is made within the district. To build a standard oven it requires 3000 crown brick, 1200 lining brick, 120 tile or bottom brick and 20 cubic yards of stone.

The coke from this region is of silvery luster, cellular, with a metallic ring, tenacious and very free from impurities, and is capable of bearing a heavy burden in the furnace. The process of coking is very simple. The coal is dumped from the larry into the oven through an opening in the crown, and leveled evenly on the floor to an average depth of 2½ feet. The door, or opening in front of the oven, through which the coke is drawn from the oven, is then nearly closed with brick and luted with loam. The heat of the oven from the previous coking fires the charge, and the process of coking is regulated by increasing or decreasing the air through the opening in top of door. When the coke is thoroughly burned or "around" the brick doors are taken down, the coke cooled by water thrown into the oven from a hose with a ¾-inch pipe attached to the end, and drawn from the oven with long hooks or scrapers and loaded directly into the car. The average 48-hour charge is 120 bushels; 72 hours, 160 bushels. The yield in coke averages 65 per cent. The 48-hour coke is used generally for blast furnace purposes, and the 72-hour coke for foundry purposes.

The region gets its name from the town of Connellsville, on the bank of the Youghiogheny River, about the center of the region.

An average analysis of Connellsville coke is as follows:

Water	0.030
Volatile matter	0.460
Fixed carbon	89.576
Sulphur	0.821
Ash	9.113
Total	100.000

The average earnings of miners in the Connellsville region are $2.01 per day of nine hours; coke drawers, $1.98; oven levelers, $2.40; car forkers, $1.33 per day; carters, $1.60 per day; drivers in the mines, $2.10 per day; track layers and horsebackmen, $2.10 per day; common laborers, $1.40 per day; machinists, engineers, blacksmiths and all other mechanics, $2.40 per day. The highest skilled blacksmiths are paid $2 88 per day, and machinists $90 per month.

The following table gives the prices of coke for the last six years, on board the cars at ovens, per ton of 2000 pounds:

Month.	1884.	1885.	1886.	1887.	1888.	1889.
January	$1.00	$1.10	$1.20	$1.50	$1.75	$1.25
February	1.00	1.10	1.35	2.00	1.75	1.25
March	1.00	1.10	1.35	2.00	1.50	1.25
April	1.10	1.20	1.35	2.00	1.00	1.15
May	1.10	1.20	1.50	2.00	1.00	1.10
June	1.10	1.20	1.50	2.00	1.00	1.10
July	1.00	1.20	1.50	2.00	1.00	1.00
August	1.10	1.20	1.50	2.00	1.00	1.00
September	1.10	1.20	1.50	2.00	1.00	1.35
October	1.10	1.20	1.50	2.00	1.00	1.50
November	1.10	1.20	1.50	2.00	1.25	1.75
December	1 10	1.20	1.50	2.00	1.25	1.75

British Columbia's Commercial Center.

After fierce rivalry Vancouver seems to have secured for herself the title of "Terminal City" in preference to Victoria, and is building up great expectations in regard to trade when the Pacific Railway shall have established its through line to China and Japan by lines of steamships on either side of the American continent. The fisheries, the timber, the coal, silver, copper and lead mines are all expected to have an important development. One foundry is in operation, one is being erected and another is projected, not to speak of numerous sawmills and factories of various kinds. The Vancouver people have high hopes of securing an enormous trade from the China, Japan and Australian shipping. This trade is already of considerable consequence, but the fast steamship line which will be established in connection with the C. P. R. next year will soon treble its volume. It is a common sight to see any day from six to a dozen large sailing ships, two or three ocean going steamers and a couple of score of smaller coasting vessels in the harbor either loading or discharging freight. Already Vancouver boasts of electric cars and electric lights, besides water, gas and sewerage systems. Either Vancouver or New Westminister will eventually be made the seat of government.

Benjamin & Block have secured large yards in Buffalo, situated on the Buffalo Creek Railroad and on the Buffalo water. They propose to make a specialty of old railway materials, scrap iron and steel, old rails, car wheels, &c., and believe that they can handle goods cheaply and promptly with the facilities they have secured. The firm consists of G. E. Benjamin, formerly with Block, Pollak & Co., Chicago, and L. E. Block, formerly with Block & Pollak, Cincinnati. Their office will be at 23 and 24 Agency Building, Buffalo.

The report of the trade of Uruguay, given by the British consul at Montevideo, shows that the imports for the last year amounted to $5,522,000, Germany furnishing most of the iron manufactures and machinery, but England leads in many respects. The United States furnishes the larger portion of the agricultural machinery, also timber, lard and naval stores. Iron beams are in much demand as a substitute for timber, and are imported mainly from Belgium, whose trade is fast increasing.

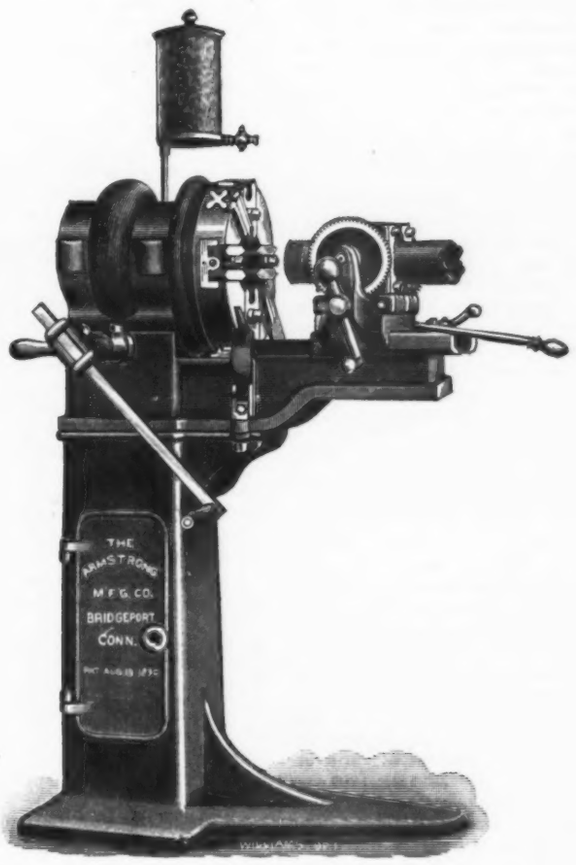
It is reported that patents will be soon issued to cover the alloying of aluminum, which will enable that metal to be tempered and to be given a cutting edge.

Pipe Threading and Cutting Off Machine.

This machine may be operated either by hand or power; it can be readily arranged for operation upon different sizes of work; the speed at which the threading or cutting off tools work can be varied at will; provision is made for the ample lubrication of all the parts, and at the same time exclude from the operating mechanism dirt and cuttings from the work, and there is, in combination with the cutting devices, a suitable vise for holding and presenting the work to the cutting mechanism.

When the machine is arranged for threading, the dies are projected outward by means of a hand wheel. The vise base is then loosened from the bed so as to be movable by means of the hand lever, and the pipe to be threaded is firmly secured in the vise jaws, which are tightened upon it by means of a shaft and suitable gearing. The dies are then projected inward by the hand wheel into position to engage the end of the pipe, after which the dies are locked in their inward position by eccentric wrists. Power being applied to the primary shaft, the latter causes the head and dies to revolve, either by means of the worm carried directly by the shaft, or by means of a geared connection, whereby a higher speed is imparted to the worm. The work is then forced into engagement with the dies by means of the lever and is there held until the threading is completed, when, instead of either reversing the machine or imparting movement to the work, the latter may be disengaged by turning the hand wheel and withdrawing the dies.

When the machine is to be used for cutting off, the threading dies are withdrawn from their operating position and the pipe to be cut is secured in the vise. By means of the lever the latter may be moved until the exact point to be operated upon is in line with the cutting off tools. The vise is then clamped firmly to the bed, and the cutting off tools operated into initial engagement with the periphery of the pipe, this being usually done by hand. A movable trip is then adjusted so that its point is in the field of the arms on the small feeding wheels and the machine is started, either of the two speeds being employed. As the head revolves, the feeding wheels are engaged and turned, one tooth at each revolution, by engagement with the trip, thereby feeding the cutting tools inward intermittently until the pipe is severed. As the shaft is hollow, pipe of any length may be worked. The dies for threading may be readily removed and others substituted by removing the screws by which they are held to the die blocks. This machine is built by the Armstrong Mfg. Company, of Bridgeport, Conn.



PIPE THREADING AND CUTTING OFF MACHINE.

Who will be the next head of the Naval Bureau of Construction? Constructor Fernald, who is said to be a candidate, is now on duty at the Union Iron Works, in San Francisco, as inspector of work on the new cruisers being built there. Constructor Mintonye is on duty at the navy yard in New York in charge of the work there, and Constructor Steele is on duty at Chester, Pa., superintending the work on the cruiser Bennington.

A dispatch from Mr. Rhoades, the South African millionaire, who is managing the British South Africa Company, says that the Barotse who live on the upper Zambesi have accepted the protection of Great Britain, and an immense territory, embracing about 225,000 square miles, has thus been added to the dominion of the company. These natives live above the famous Victoria Falls, on the north side of the Zambesi River.

Test of a 500 Horse-Power Triple Expansion Engine.

Some time since the Narragansett Electric Lighting Company, of Providence, R. I., contracted with the E. P. Allis Company, of Milwaukee, for a Reynolds-Corliss triple expansion engine, to be built upon the unexampled guarantee of developing an indicated horse-power with an expenditure of 12.6 pounds feed water per hour. This engine was installed in the new power station on Elm street, and is nightly in operation. It has recently been tested by E. D. Leavitt and John T. Henthorn, well-known mechanical engineers, and while the engine did not reach the actual figures of the guarantee by an excess of 0.34 pounds of steam per horse-power per hour, the conditions were such that the builders could have claimed that a fair test had not been made according to the terms of the contract. The engine was handicapped by moist steam, as will be explained by Engineer Leavitt in the report following; but the remarkable showing of but 12.94 pounds of steam per indicated horse-power per hour was made, and the result, under the circumstances, was highly satisfactory to the purchasers, and the engine was accepted at once. A test of this kind is of interest to all users of steam, and the engine and method of operating will be described.

The engine has cylinders of 14, 25 and 33 inches diameter and 48 inches stroke. The high pressure and intermediate pressure cylinders work tandem on one crank, and the low pressure on another crank at right angles to the first. The high pressure cylinder has one piston rod; the intermediate pressure cylinder two piston rods and one tail rod connecting with the high pressure piston, and the low pressure cylinder two piston rods, all rods being $2\frac{7}{8}$ inches in diameter. The cylinders are built with loose heads at each end; the valves, of the Corliss type, being located in the heads. The cylinders are steam jacketed in the barrels, but not in the heads. The receivers are horizontal and steam jacketed. Steam is taken from the main steam pipe to the jacket of the first receiver. The drain from this goes to the jacket of the second receiver, thence to the high pressure cylinder jacket, thence to the intermediate pressure cylinder jacket. The jacket water is drawn from the low pressure cylinder by a pump worked by the main engine, and returned to the boilers. The valve gear is of the Corliss type. The high pressure cut off is regulated by a centrifugal governor. The intermediate pressure cut off can be regulated by the same governor or by hand (during the test it was hand regulated), and the low pressure cut off is regulated by hand. The low pressure valve gear is worked by two eccentrics, one for steam and one for exhaust. Steam was taken from a branch from an 18-inch pipe, which was intended to supply steam to several engines, but none of the other engines are yet in place. There are no means of separating moisture from the steam before entering the engine nor of removing any water of condensation from the steam after leaving one cyl. inder and before entering the next oner The engine exhausts to the condense, through a pipe which is intended as an exhaust main for future engines, but for the purpose of this test a temporary exhaust pipe of proper size for this engine alone was led direct to the condenser. The condensing apparatus is entirely independent of the main engine, and consists of a surface condenser, a 16 x 16 inch plunger circulating pump, a 24 x 16 inch single bucket lifting pump without foot valves, and a Corliss type steam cylinder, 12 x 16 inches, working both pumps by crank connections. This steam cylinder is well lagged, but not jacketed. It had

been arranged to exhaust into the second receiver, but just previous to the test was changed to exhaust into the first receiver. The whole condensing apparatus is intended to receive the exhaust from future engines, as well as from the one tested. The clauses in the contract relating to test were as follows: "The said engine is further guaranteed to develop an indicated horse-power with an expenditure of 12.6 pounds of feed water evaporated into dry steam per hour when running at 125 pounds of steam and at 100 revolutions per minute. The limit of variation of power from the rated shall not be greater than 25 horse-power each side of 500 horse-power when tested. The mode of testing said engine shall be to weigh the feed water entering the boiler, and if necessary, a calorimeter test of the quality of the steam shall be made. The test shall not be less than ten hours. All steam required for jackets shall be charged to the engine, and shall be a part of the quantity named in the guarantee. Upon making such calorimeter test, if it is found that superheated steam is furnished the said engine, the proper debit shall be made against such engine for the amount of superheating thus found. Credit for power developed in condensing apparatus engine will be given at same rate per horse-power as for main engine." This last clause was interlined on the contract, and was not in the copy furnished as a guide for the test, and was not known to the experts until after the test had been made.

In making the test it was found inexpedient to measure the feed water, on account of leakage from boilers, so arrangements were made to weigh the water discharged from the engine. The water, after being drained from the weigh tanks, was taken by the feed pump and discharged through a meter, as a check on the weighing. The temperature of the hot well water was taken at each weighing. As the condensing water drawn from the river was salt water, it afforded a means of detecting leakage, if any, in the condenser. Therefore, the hot well water was frequently tested by nitrate of silver, but no leakage was found. The condenser was also tested previous to the engine test and found to be perfectly tight.

Indicators were put on all steam cylinders of main and auxiliary engines, one on each end of each cylinder, and all connected as close to the cylinders as possible, all pipe connections being direct, without bends or angle cocks. The motion for indicators was taken from the engine crossheads by pantagraphs. The six indicators on the main engine were electrically connected, so that all cards of each set were taken simultaneously. All springs and gauges used were carefully tested before and after the engine test, and the utmost pains were taken to secure accuracy in this regard. A perforated pipe was inserted horizontally in the vertical main steam pipe close to the engine throttle, through which steam was collected for test calorimeter. The calorimeter, of the barrel type, was made of galvanized iron with double walls, insulated with hair felt. It was provided with a set of rotating paddles for equalizing the temperature of the water. The steam entered through a ¼-inch brass pipe coiled in the bottom of the barrel. The barrel was mounted on a platform scale, provided with a jockey weight, which gave readings to $\frac{1}{10}$ pound. The observed weight of condensing water was corrected to include a weight of water equivalent in heat capacity to the metal of the calorimeter, which was subject to the same changes of temperature of the water. The engine was tested as found, without testing pistons, valves or anything else within the engine itself, except testing the tightness of the condenser and of stop valve, where leakages to or from the engine might occur. The bore of the cylinders was not measured, on account of the work involved in removing cylinder head, valves, gear, &c., both parties being satisfied to accept the horse-power calculated from the nominal diameters. During the test the condenser engine exhausted into the first receiver, but the engineers say that had the clause in the contract regarding this engine been known, the exhaust would have been turned into the atmosphere and the duty of the main engine determined.

At the time of the test the electric street lights were burned to determine the load upon which the engine would come nearest to 500 indicated horse-power. Four hundred, 450, and 500 arc lights were thrown on in turn, and two sets of indicator cards were taken at each load. The average of two cards taken with 500 lights on showed the main engine developing 475.7 horse-power, the auxiliary engine 16.3 horse power, and the aggregate 492 horse-power. It was thus found necessary to fix the load at a little over 500 lights in order to keep within the limit of 25 either side of 500 indicated horse-power. At 9:30 p.m. the engine having been run for about two hours, the water was turned into the weigh tank and the counters thrown into gear. Indicators cards were taken at intervals of 20 minutes, the temperature and pressure noted at the same time. The engine was run until 7.30 a.m., when the reading of counters was taken, throttle shut and the water turned off the last tank. The steam pressure was kept fairly steady during the test, except for a short time at midnight when it was reduced to 110 pounds at the engine through carelessness of the fireman.

The results of the test in full with record of the observations include tabulated statements which would probably cover more than three pages of *The Iron Age*. Summed up they are as follows: The test lasted 10 hours, during which the main engine made 59,376 revolutions, maximum 99.93 per minute, minimum 99.10 per minute, and average 99.12 per minute. The condensing engine ran at an average speed of 61.29 revolutions per minute. The maximum steam pressure at the throttle was 128 pounds, the minimum, for a few minutes only, 110 pounds, and the average steam pressure was 125.2 pounds. The average steam pressure in the first receiver was 26.98 pounds, and the average pressure in the second receiver was 1.70 pounds. The vacuum at condenser showed a maximum of 26.7 inches, minimum 25.8 inches and average 26.5 inches. The barometric average was 30.08 inches. The average temperature of injection water was 72° F., of hot well water 109.06° F., and of the engine room 90° F. The indicated horse-power of the main engine was maximum 529.7; minimum 502.2; average 515.7; of condenser engine, maximum 17.7; minimum 14.8; average 16.41. The aggregate horse-power developed was 532.11. The water discharged from the hot well was 63,684 pounds, from the jackets 10,653 pounds, total from engine 74,337 pounds. The percentage of total steam used in jackets was 14.33 per cent.; the water entrained in steam, per calorimeter test, 7.39 per cent., amounting to 5497 pounds, and the net steam used by the engine 68,840 pounds, making 12.94 pounds of steam per indicated horse-power per hour.

The experts conclude that the steam per horse-power per hour was 0.34 pounds, or 2.7 per cent., in excess of the guarantee, but state that the engine was badly handicapped by moist steam. "The water found to be present in the steam was deducted from the weight of water collected in the tanks in determining the net steam chargeable to the engine, but the presence of this water affects the economic action of the steam with which it is mixed, but to what extent," says Mr. Leavitt, "it is impossible to calculate." It is his opinion that the 7.39 per cent. of water in the steam would make a difference of at least 10 per cent. less duty than would be performed by dry steam, or not less than 2½ per cent. after subtracting the weight of the water itself. Another allowance of indeterminate amount should be made for the steam used by the condensing apparatus engine in excess of what have been used by an engine of the same power, but at the same rate of duty as the main engine, according to the clause in the contract, which was not made known until after the test. It is impossible to say just what allowance should be made for this. On the one hand, this engine is not economical by reason of its unjacketed cylinder and low piston speed, and, on the other hand, it exhausts the steam into the first receiver, so that it does good work in the last two cylinders. "As a matter of opinion I would say that an allowance of ½ of 1 per cent. should cover the loss of economy due to the small engine.

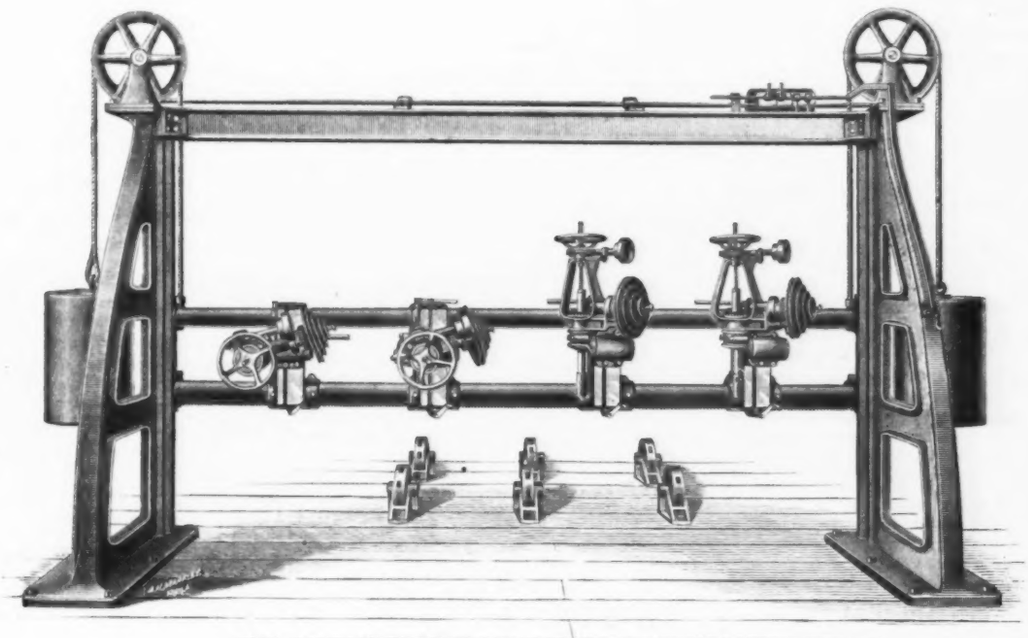
"Now, the excess over the contract duty is only 2.72, so that I do not hesitate to express the opinion that the allowance for small engine, plus the loss caused by wet steam, would bring the duty within 12.6 pounds. This, of course, is an opinion only, but I cannot say positively, and there is no way of determining it from the data at hand. Although the Narragansett Electric Lighting Company can claim that the contract terms as to duty have not been fulfilled, and can insist upon the engine being made to show positively that it can do its work on a consumption of 12.6 pounds of steam, yet the E. P. Allis Company would be justified in claiming that the engine has not had a fair test on account of the abnormal wetness of the steam, and in demanding, if another test be called for, that the steam be dried by separator or otherwise, so as to contain not more than 2 per cent. of water when delivered to the engine."

A National Board of Commerce.

The Maritime Association of New York has presented to the commission appointed by Secretary Windom its reasons for believing that a national board of commerce should be established, similar to the British Board of Trade. The Maritime Association of this port includes 1400 business men, embracing ship and steamship owners, merchants, importers, exporters, underwriters, and others interested in commerce. The association says that $150,000,000 a year which should be saved to this country by Government supervision is now paid to foreigners for ocean service. The interests of commerce are now co extensive with those of agriculture. But to meet the obvious necessities of commerce bureaus of steam inspectors, navigation, life-saving and marine hospital service were instituted, which now should be combined into a national department with a Cabinet officer at its head. The association suggests that the board should collect, preserve and disseminate information on commerce, report to Congress on the operations of the laws of commerce in this and other countries, and propose legislation necessary to promote the commercial interests of the United States. The petitioners recommend that the new bureau embrace the chiefs of the Bureau of Navigation, and of the Steam Inspection, Life Saving, Marine Hospital, Coast Survey and Lighthouse services, together with the Hydrographer of the Navy and so much of the Bureau of Statistics as relates to commerce and navigation; also six experts drawn from civil life and one citizen familiar with admiralty practice.

Boiler Shell Drill.

This machine was originally designed by Thos. H. Dallett & Co., of Philadelphia, for drilling the rivet holes in boiler shells after the plates had been bent and bolted together. It is also adapted for other work, such as drilling stay bolt holes, cutting flue holes, and with it large castings, such as cylinders, steam chests, bed plates, &c., can be drilled to advantage, either under or in front of the machine. The boiler shell rests horizontally upon four or six rollers in front of the machine, so that after bringing the spindles into line with the shell, by revolving the shell and moving the heads horizontally all the holes can be reached. The drilling heads are mounted on a crosshead consisting of two horizontal beams, supported at both ends by uprights, and counterweighted and furnished with a power lifting arrangement. The drilling heads are easily moved horizontally by means of a pinion gearing into a rack on the lower beam, and have a vertical adjustment between the beams operated by a screw, thus giving a quick and delicate means of setting the drill after the shell has been turned to near the required position. The head can be turned on a cylindrical bearing by means of a worm and tangent wheel to any angle from a horizontal to a vertical position. Care has been taken in design of the head to give the operator standing on either side full control of both horizontal and vertical movements. The roller frames have bolt holes at both ends, so they may be fastened to sills or plates in front of the machine, and their positions easily changed for different sized shells.



BOILER SHELL DRILL.

The principal dimensions of the machine are: The horizontal range is 12 feet from center to center of spindles when heads are furthest apart; vertical range of crosshead, 7 feet; vertical adjustment of drilling head between beams of crosshead, 12 inches; the spindle has 13 inches traverse and automatic feed; total hight of machine, 11 feet; length over all, 18 feet.

Racing across the Atlantic by the fast steamers will be discontinued by mutual agreement. The enormous cost and risks forbid the continuance of such contests. The Inman and White Star lines have entered into an arrangement whereby a fast steamer of each line will leave Liverpool every alternate Wednesday. The first Wednesday in January the City of New York will leave Liverpool. She will carry the English mails, and on the following Wednesday the Teutonic will sail, also carrying mails.

The Hall Torpedo.

It is understood at the Torpedo Station at Newport, R. I., that the Secretary of the Navy has decided that the torpedo invented by Lieut. Martin E. Hall, U. S. N., is to be made at the station and that work will begin at once. Lieutenant Hall is attached to the station. The torpedo has been tested with good results. This torpedo, in common with the Whitehead, Schwarzkopf and Howell, belongs to the auto-mobile type of locomotive torpedoes in contradistinction to the controlled torpedoes like those of Lay, Patrick and Brennan.

The special features that distinguish the Hall from others of the auto mobile type are :

The pectoral fins for righting it and increasing its directive force; a special automatic engine (mounting in the after head of the flask) which utilizes the full expansive force of the motive power, and by its compactness permits the use of an unusually large air flask, about double the size of that used in other torpedoes of this type ; a very simple immersion valve for maintaining the constant depth, and a bouyant grapnel for overcoming the net defenses of vessels of war.

The torpedo and its mechanism are constructed of aluminum brass having a tensile strength of 87,000 pounds per square inch. The metal surpasses the ordinary cast steel in strength, and has the additional advantage of being non-corrosive in salt water. The torpedo is made in three sections, which are afterward screwed together. The first section contains the magazine with its firing apparatus and the pectoral fins; the second the air flask and the engine mounted in its after head; the third, the immersion regulator, the screws, tail and buoyant grapnel.

It is well known that the pressure of water under the lee bow of a ship or boat, when under way and heeled over, tends to right the vessel and also to throw her bow to windward. Lieutenant Hall takes advantage of this force to right and steer his torpedo automatically, but owing to its being wholly submerged and symmetrical in figure it is necessary to change the displacement of either bow as required. To accomplish this the magazine is pivoted at its after end and suspended at the forward end, so that it has a slight swinging motion when the torpedo rolls. Pectoral fins are placed on the bows and adapted to be moved by the swinging magazine.

Water enters the forward section of the torpedo and surrounds the magazine, so that there is an equal water pressure on both sides of the pectoral fins. Any force that deflects the torpedo makes her roll. Upon rolling, say to starboard, the magazine swings to starboard and presses out the starboard pectoral fin, which (increasing the displacement of that bow) rights the torpedo and throws her back on her course. As soon as the torpedo is righted the magazine is centered by gravity and the force of two slight springs.

The torpedo is 12 feet long and 14¼ inches in diameter at the center, the general shape being that of a cigar. The air flask contains air compressed to a tension of 800 pounds per square inch. This is used in an automatic engine that cuts off the supply at such varying points of the stroke as may be necessary to maintain a mean effective pressure of 100 pounds per square inch upon the pistons, which is sufficient to give a speed of 2100 revolutions per minute to the screws.

Exhaust air from the engine passes to the immersion valve (which is situated at the extreme after end of the torpedo) and thence through outlets at the top or bottom of the valve, as the case may be, where its reaction upon the outside water depresses or raises the stern of the torpedo, causing it to rise or dive. The valve is actuated by a float whose position varies with the amount of water in the immersion chamber. Water enters the immersion chamber through a telescopic tube, compressing the air in the chamber, as soon as the water covers the bottom of the tele-

scopic tube. By extending or contracting a greater or less quantity of air is imprisoned in the immersion chamber, and hence (as the valve is not placed by the float in its neutral position till the immersion chamber is half filled with water) the torpedo dives to a greater or less depth, according to the extension or contraction of the telescopic tube.

A large tube in the bow of the torpedo boat contains the torpedo with its flask filled ready for operation. The buoyant grapnel is stowed between the upper and lower tail at the stern, and its tow line carried forward to the trigger at the bow and stopped down. An impulse cylinder under the tube has a piston rod with a projection on its end working through a slot in the bottom of the tube, and acting upon the tail of the torpedo. A pipe from a compressed air reservoir leads to this impulse cylinder, and upon opening the valves the torpedo is launched with great velocity; the throttle valve of the engine is automatically opened admitting the compressed air of the torpedo flask thereto and starting the engine as the torpedo enters the water; the immersion regulator controls the depth at which it will travel. and the pectoral fins keep her on her course.

The buoyant grapnel is swept aft, and tows astern and above the torpedo, so that as the torpedo passes below a vessel's bottom, the buoyant grapnel fouls the net and bringing a strain upon the tow line, explodes the magazine. If the opposing vessel is not protected by nets the torpedo is regulated for a less depth and explodes upon striking the sides of the ship.

NEW ENGLAND ITEMS.

C. H. Veeder, of the Thomson-Houston Electric Works, Lynn, Mass., has patented an electro magnetic friction clutch or brake, consisting of two electro-magnetic members mounted upon a shaft, one of said members being fast to the shaft, while the other is free to rotate thereon, each member being an energizing coil whereby they may be independently magnetized so as to either attract or repel.

It is rumored that Washburn & Moen, of Worcester, Mass., have purchased the Burling Mills privilege and property at Millbury, Mass., and intend building there. These mills were burned a number of years ago and never were rebuilt.

The Whitman Agricultural Implement Works, at Auburn, Maine, are making extensive improvements and alterations. The machine and forge shop is to be raised and a story built underneath it. A new mill, 100 x 22 feet, will also be erected and a lot of new machinery placed in position.

The business of the Jewett Belting Company, of Connecticut, is rapidly increasing. The company have already developed a trade in supplying electric installations, and are constantly receiving orders for that class of goods. The company have recently sold to one company alone one 50-inch three ply, a 54-inch double, a 44-inch double, four 18-inch and a number of 16-inch and two 24-inch. They have also sold a 48-inch double, a 40-inch double, two 36-inch and 28-inch.

The Wheelock Engine Company, of Worcester, Mass., are having an exceedingly busy season. Although the company moved into new works early in the past spring to gain capacity to handle their increasing business they find almost before getting settled that the new facilities, though two or three times the capacity of the old, are crowded to the utmost, and they have been running nights the larger part of the time. Extensive additions to the plant will be imperatively demanded for next year's business by the natural increase and the amount already in sight. There is every indication of a still greater pressure of business for the coming year.

The great 250 horse-power regenerator in the testing house of the Thomson-Houston Electric Company, of Lynn, Mass., is now furnishing power to run the several lines of the Lynn and Boston Railroad, the Highland circuit, Wyoma and Walnut streets, which were deprived of power by the explosion on Sunday. The generator was ready before the wiring was. The big machine just plays with the load carried by these cars on these several routes. They require 100 ampères, while its capacity is 400. It will be run until the Gas and Electric Company are ready to resume their contracts.

There is a strong probability that the works of the National Horse Nail Company, at Vergennes, Vt., will be enlarged in the near future. The business during the past month has increased so rapidly that all of the employees are working overtime, and although running to full capacity orders cannot be caught up with.

A corporation, to be known as the Haywood Foundry Company, has been organized at Portland, Maine. The company has a capital stock of $150,000; its officers are: President, Earl A. Thissel, of Florence, Mass.; treasurer, W. H. Wilder, of Florence, Mass.

Indications point to a starting up of the axe and edge tool works at Brooksville, Vt., at an early date. A bill to incorporate a new company is now before the Legislature and provides for the sale of the stock at $10 per share in order that the operators as well as the capitalists may invest. The capital stock is to be $50,000, of which $20,000 will be used to start the work.

The new steel screw steamer Boston, to run between Boston and Yarmouth, N. S., will be the fastest of her size entering the former port. She is 245 feet long, 36 feet wide and 28½ feet deep. She was built on the Clyde and is propelled by triple expansion engines having cylinders 34, 51 and 81 inches in diameter by 36-inch stroke, which are supplied with steam at 160 pounds pressure (under natural draft conditions only) from three large steam boilers having 15 of Purves' ribbed flues. The vessel is fitted throughout with electric light. On six consecutive runs on the measured mile at Skelmorlie, with fully 250 tons dead weight on board, she attained a speed ranging from 18.09 to 18.32, and averaging 18.22 knots, or about 1¼ knots above the guarantee.

The Maddox Wire Belting Company, of Saccarappa, Maine, are doing a steadily increasing business, and intend to increase the capacity of the works at an early date.

The Richmond Iron Works, at Cheshire, Mass., have completed the repairs on their furnaces and resumed operations.

The National Lathe and Tool Company, of Philadelphia, have sent a communication to the New Bedford Board of Trade stating that they desire to remove their Boston plant to that city, where a probable increase of capital will be made.

The Leavitt Machine Company have been formed at Orange, Mass., with W. M. King, president; G. E. Bates, secretary and treasurer, the above and J. B. Farley and T. E. Leavitt, directors. The company have leased a factory, and will soon begin a general machine business.

Frank Cushing, wire nail manufacturer, at Palmer, Mass., is to move into the mill formerly occupied by the Wright Wire Cloth Company.

The Nashua Iron and Brass Foundry Company, at Nashua, N. H., are putting up a large addition to their foundry building, which will employ a large number of new hands.

The New Home Sewing Machine Company, at Orange, Mass., are to increase their output about one-fourth within a few months.

The Spencer Arms Company, at Windsor, Conn., have completed their works and will remove their machinery from the building immediately, so as to make more room for the Eddy Electric Company.

A contract has been awarded by the Steel Edge Japanning and Tinning Company, of Medway, Mass., for a large new factory 800 x 60 feet. Work on the foundation has been commenced.

The contract for furnishing an iron planer, 48 x 48 inches x 16 feet, for the Government workshops at Boston Navy Yard, has been awarded to the L. W. Pond Machine Company, of Worcester, they being the successful bidders. Five months is allowed in which to complete the tool.

The Humphrey Machine Works, Keene, N. H., builders of water wheels, traction gears, fire pumps, &c., are about closing up some large jobs, thus completing one of the busiest seasons in the history of the country.

The National Railway and Street Rolling Stock Company, of Boston, Mass., will, it is said, build car shops at Galveston, Texas, provided the citizens subscribe for $100,000 of the stock in a $500,000 company.

The various iron industries at Taunton and vicinity were never in more prosperous condition than at present, all statements to the contrary notwithstanding. An unusually large amount of coal and pig iron is being received in the various freight yards. The demand for molders at the numerous stove works far exceeds the supply. South American orders are coming in for ranges of Taunton make, and as a natural result the stove lining works at the Weir are rushed with orders. At the larger ironworks a similar condition exists. The Taunton Locomotive Works are turning out electric car trucks with large orders ahead, and their cotton machinery department is running overtime.

There are at present a little more than 2600 men engaged in the Thomson-Houston factories. An average of 100 are hired weekly, the men being secured from all directions. A very heavy force of men will be required for the new factory "L."

The iron industry in the vicinity of Pittsfield, Mass., is feeling a remarkable impulse at present, and many men will be added to the forces at the various iron companies. For some years the industry has been in a state of collapse, many of the plants being closed, and, all told, only 225 men were employed. At present there are 70 men employed at the ore bed at West Stockbridge, that being the full capacity; the Hudson Iron Company's mine, in the same town, with a capacity of 100 hands, has employed 20; the Cone bed, in Richmond, employs 75 men, and the Shaker bed, in Pittsfield, 60 men, making a total of 225. The Hudson Iron Company will increase the force to 100 men, the full capacity; the Richmond Iron Company will at once employ 75 men at the Pomeroy bed, which has been idle three years; the Beebe ore bed, which has been idle for 20 years, is to start up at once, giving employment to 50 men; the Gaston bed, after a long idleness, will be run with 50 hands, and the Cheever bed, which has not been operated for 8 years, will start at once, employing about 75 men. This means that more than 300 idle men are to have lucrative employment this winter.

South American Tariff.

Merchants in the South American trade whose offices are in this city complain of the restrictive effects of increased duties recently imposed by several nationalities, apparently with the design of coercing the United States into the adoption of reciprocity measures. It is stated that Ecuador, Brazil and Nicaragua have all made advances in the direction indicated. The new higher tariff will be enforced November 15 in Brazil, January 1 in Ecuador, and about the same date in Nicaragua. Other South American countries are now discussing the raising of duties on lard, kerosene and similar American products. In explanation of these movements one view taken is that by advancing duties now, "taking time by the forelock," as it were, the South American countries shrewdly place themselves in a position to make more liberal concessions later on in case negotiations should be resumed for treaties of reciprocity. In regard to Brazil, Mr. Blaine reports that he will have a treaty with that country drafted in readiness for the coming session of Congress.

The South American produce imported into this country, such as hides, coffee and rubber, are just now in a very peculiar position. "Take hides, for instance," said a merchant. "Hides have declined about 20 per cent. in value in the last few weeks. Coffee has weakened considerably, and the report that Brazil will soon reduce the export duty on coffee by 6 per cent. has had its effect on the coffee market, of course. The rubber market is in a very interesting condition for some people. Much money must have been lost in the rubber trade in the last few weeks. South American rubber that has been selling at 95 to 98 cents a pound in August and September was reported Thursday at 73. Naturally this depression is a great blow to the rubber trade, and especially to those speculators who have been accumulating stocks with a view to forcing prices up. There are now about 2,500,000 pounds of rubber in the market here, and the depression is largely due to this overstocking of the market. The consumption of rubber has increased, but the consumption has not increased as rapidly as the production."

Railroad Consolidations.

The *Railway Age*, of Chicago, says: "The manifest destiny of railway property in this country is toward consolidation. Oppressive legislation, resulting from the hostile temper of the people, is gradually forcing such a result, and unless this undergoes a change it is safe to predict that at no distant day the various detached and independent lines of railway, which are now the life of competition, will be forged into vast transcontinental chains or systems only limited in their extent by the boundaries of the continent. This is diametrically opposed to the wishes and best interests of the people, but their unreasonable antagonism to interests with which they should really feel themselves closely identified, and which are, in fact, the mainstay of their social, political and financial welfare, is fast defeating the very object of their attacks. Such defeat means more than the mere consolidation of railway capital. It means a complete paralysis of healthful competition, with all the advantages inuring therefrom to the public ; it means a curtailment in expenses which have been distributing among the people a large amount of revenue; it means the stifling of individual effort and emulation among a vast army of railway officials and employees, and the concentration of such endeavor in a few great generals, whose dictum will be a law unto itself, subordinating all others into the mere automatical parts of a great machine. The potentiality of such undesirable results should be sufficient to awaken in the public mind alarm at the dangerous tendency of the times, and to suggest the wisdom of desisting from further efforts to weaken railway interests by laws which have proven themselves futile and unjust. These laws have been inspired by popular clamor without due consideration of their far-reaching effects. It was expected from them that they would dwarf or at least control corporations which were already too large and powerful, but they have simply proven the means for aggravating the trouble. The weaker lines have been forced into warfares that have proven disastrous, and as a last resort are seeking the protection of the stronger lines, which are forced to absorb them in order to keep their revenues intact."

The Threatened Coke Strike.

An instance of how a strike that will cause serious loss to employers and employees is often occasioned by trivial circumstances was well illustrated during ths past week. The case in point is that of the 6000 or more men in the employ of the H C. Frick Coke Company, in the Connellsville region, who were about to go out on a strike because of the discharge of one man, who had broken the company's rules and was dismissed from its employ. The balance of the workmen championed his cause and served notice on the firm that unless he was reinstated within a certain period they would all go out on a strike. The firm replied that the man had given sufficient cause for dismissal and would not be taken back, but rather than have a strike occur they would agree to submit the matter to arbitration, and if the case was decided against them they would agree to take him back in their employ. This proposition of the firm was at first rejected by the men, but on second thought was adopted, and arbitrators from both sides were apointed, whose decision in the matter will be final.

Some arrangement should be adopted between employers and men that similar disputes be referred to a committee composed of one or more members of the firm and the same number from the workmen. An umpire or judge could be appointed to hear testimony from both sides and then render his decision, with the understanding that both parties must abide by it. It is a well known fact that strikes often take place through misunderstandings that never would take place if those interested would come together and endeavor to settle the point in dispute.

The Arbitration Committee appointed to settle the dispute between the H. C. Frick Coke Company and their workmen in the Connellsville region have decided in favor of the workmen. The decision was rendered on the afternoon of the 11th inst., and reads as follows: "We, the committee to decide upon the discharge of Andrew Verostic, which occurred October 14, 1890, at the Tip Top mine of the H. C. Frick Coke Company, do say: 1, we believe Andrew Verostic was wrong; 2, we believe the wrong not intentionally done; 3, we therefore decide in favor of his reinstatement."

The Affairs of Brown, Bonnell & Co.

Under date of the 6th inst. William McCreery, of Pittsburgh, who purchased the extensive plant of Brown, Bonnell & Co. at Youngstown, Ohio, for the trustees appointed by the creditors, issued the following circular to the creditors:

The committee have bid off in trust for the creditors represented by them at $700,000 the plant of Brown, Bonnell & Co., appraised at $962,000. In addition to this the receiver has still the further value of nearly $80,000, at his estimate, which will be collected and sold and the proceeds distributed among creditors. The sale of the plant was contested, but was confirmed by an opinion of District Judge Ricks, concurred in by Circuit Judge Jackson. Mr. Crawford, as was expected, has again appealed to the Supreme Court of the United States, probably for delay. There is no reason, however, to expect much delay. The sale was made in pursuance of the decree and mandate of the Supreme Court itself, and it is expected that the matter will be taken up by that court as soon as the records and briefs can be printed. There is, the committee think, ample reason for taking the case out of its order by number, but in a late case, 132 United States Supreme Court, 210, that court took broad ground as to hearing out of order the execution of final process, as delay in such cases would be "intolerable." The works are still in the possession of the receiver, running for the benefit of creditors. He reports plenty of business and good profits. The amount of debts in June, 1884, was about $1,300,000, very nearly all of which is represented by the committee. The committee have had offers of purchase from both American and English parties on such terms as to pay these amounts in full with a portion of the accrued interest. The court, near the close of its opinion confirming the sale, said the property was not only preserved intact for the protection of creditors, but by the wise management of the receiver and his principal agents and officers under the general directors of the court, a fund of $700,000 has been accummulated, so that after long and expensive proceedings it seems assured that every creditor will be paid the principal sum due him in full.

J. B. Archer, of 45 Broadway, New York City, inventor of the Archer Gas Fuel Process, arrived in Pittsburgh on Monday of the present week, for the purpose of negotiating with a number of manufacturers of that city, who are considering the question of adopting his system for the manufacture of fuel gas. In an interview Mr. Archer stated that his process had been in successful operation in a number of iron, steel, glass and other kinds of manufacturing establishments in various parts of the United States for about three years. The gas is made by a commingling of steam highly superheated and a very small quantity of Lima oil. The entire machinery can be placed in a brick vault 6½ feet square and costs but little for repairs. By the process a steady stream of Lima oil as thick as a lead pencil is sufficient to heat 1000 ingots per day. It is also claimed by Mr. Archer that 55 gallons of oil will do as much work as a ton of coal. The fact that coal and slack can be procured in Pittsburgh at very cheap rates will probably operate against the adoption of the Archer system in that city.

The Trades in New York.

Quite recently a careful inquiry has been made into the condition of the various trades in New York City, and the conclusion is that the laboring man is now better paid, housed and fed than at any former date. Workmen are more thoroughly organized than ever, and the work of perfecting their organization is constantly going on. The tendency is to the decrease of the Knights of Labor, the local organizations of which were largely made up of men of different trades in one body. In place of the Knights has grown up a powerful body, the American Federation of Labor, organized each trade by itself. At the last report there were 62 national and international separate trades, comprising 586,000 members, belonging to the Federation, of which Samuel Gompers is president. In the last six months about 300 local organizations have been added to the Federation. The plan of keeping the affairs of each trade as much as possible in the hands of men belonging to that trade, which is the peculiar feature of the Federation, works well. New organizations are constantly springing up. In many trades it is almost impossible to get anything done without paying union wages and conforming to union rules. One tendency which workmen can hardly view with satisfaction is to drive a great deal of work out of the city to points where there is more freedom of action. This is noticed in the printing business and in the building trades. Doors, sashes, window blinds, moldings and even trimmings are made in great factories in various parts of the country by non-union labor and brought here to be put together in buildings. This is also true of immense quantities of iron and stone work, which is got ready elsewhere and merely put together here. The city contractors for large buildings find it very difficult to compete with out of town contractors, who underbid them by means of facilities to do the greater part of the work elsewhere. There is a growing tendency to lessen strikes and keep the men more steadily at work by agreements between the bosses and the union men for a certain scale of wages to be renewed every year. The men fix the scale and the bosses agree to it, and really do not care much what the scale is so long as all the bosses are compelled to pay alike. The stonecutters, masons, plasterers and tin roofers have adopted the plan, with good results.

The Smith Premier Typewriter Company, Syracuse, N. Y., issue an illustrated catalogue descriptive of their Typewriter. They also inclose testimonials of a very flattering character. This Typewriter has been adopted by the Associated Press of the State of New York, to be used by telegraph operators in recording telegraph matter.

MANUFACTURING.

Iron and Steel.

The East Chicago Steel Works, at Hammond, Ind., have been purchased by a Cleveland and Youngstown syndicate, composed of persons largely interested in Brown, Bonnell & Co. For some time these works have been leased by the Lakeside Nail Company, who, however, only operated the nail factory. It is understood that the new owners propose to put the Bessemer steel converters into operation and make additions to the machinery for the purpose of diversifying the product. The erection of one or more blast furnaces is contemplated in order to be independent of the producers of pig iron.

The Atkinson Car Spring Works, of Chicago, are building a plant near Harvey, Ill., for the manufacture of steel for their car springs. They are putting in a 12-ton open hearth steel furnace and a 12-inch train of rolls. The spring works are located in the city at present, but will in the course of time be removed to the vicinity of the steel works.

The plant of the Belleville Steel and Iron Nail Works, at Belleville, Ill., will be offered for sale on December 6 next. The plant was built in 1855-6, and contains two heating furnaces, one 22-inch train of rolls and 60 nail machines, its product being iron and steel nails. The plant is now being operated by the Crescent Nail Company.

The new spike mill of the Midway Iron Company, at Roanoke, Va., is almost completed and will soon be put in operation.

Furnace A, of the Monongahela Furnace Company, at McKeesport, Pa., is about ready for blast and will probably commence operations during the present week. It is expected to produce about 250 tons per day. The companion stack, known as furnace B, will also be ready for blast in a short time.

The employees of the Carrie Furnace Company, of Pittsburgh, whose blast furnace plant is located at Rankin Station, Pa., will ask for an increase in wages on January 1 next. It will run from 10 to 40 per cent., according to the character of the labor performed.

The blast furnace now in course of construction by the Brier Hill Iron and Coal Company, at Youngstown, Ohio, is expected to produce 240 to 250 tons per day, which will make it one of the largest furnaces in the Mahoning Valley. Grace Furnace, owned by the same company, is now averaging 200 tons per day. The new stack will be known as Grace No. 2, and will be completed and in operation in about 30 days.

All the blast furnaces in Wheeling, W. Va., and vicinity are making a large output daily, and all the steel plants are in operation. The mill of the Crescent Iron Company, in Wheeling, and those of the Ætna Iron and Steel Company and the Standard Iron Company, at Bridgeport, Ohio, are still actively engaged in filling orders, but little opportunity having as yet been offered for stocking up. What has gone into their stock houses have mostly been forced in by a lack of cars and other transportation facilities. The nail factories are turning out their product in large quantities, and shipments continue to be made to the West.

The Jefferson Iron Works of Stubenville, Ohio, recently notified their nailers that they will be compelled to work until 7 o'clock each evening and up to 3 o'clock p.m. on Saturday.

At the Beaver Falls mills of Carnegie, Phipps & Co., Limited, at Beavers Falls, Pa., a smoke stack is being erected which, it is claimed, will be the largest one in that State. The stack at its base is 30 feet in diameter. Commencing at the ground there will be 15 feet of stonework, and on top of that will be the brickwork, the whole to be surrounded by a sheet iron covering. It will be 200 feet high and will be lined with fire brick from top to bottom.

The Slatington Rolling Mill, at Slatington, Pa., ground for which was broken last April, is completed, and five of the nine furnaces building are already in full operation. Wm. P. Hopkins, to whom is chiefly due the credit of locating this establishment at Slatington, is general manager. Dr. A. P. Steckel is president; Joel Neff, treasurer, and S. DeLong, secretary.

The Scranton Steel Company, at Scranton, Pa., made on Thursday last, November 6, 46 heats, aggregating in weight about 400 gross tons of ingots, on one converter bottom. So far as is known, this is the largest run yet on record with one converter bottom.

Eureka Cast Steel Company, Chester, Pa., are adding to their plant an open hearth furnace of the Siemens-Martin type, 8 tons capacity. The work is being erected by J. A. Herrick, Bridgeport, Conn., and is to be completed by February 1, 1891.

The Chester Foundry and Machine Company, Chester, Pa., are actively engaged on numerous special contracts, embracing some heavy work for electric light purposes, rolling mills and machines for manufacturing ice. They have also a number of orders for cranes and the Brotherhood three-cylinder high speed engine, of which they are the sole manufacturers for the United States. The entire establishment has been running for some time past 14 hours per day. The business is steadily increasing, and the company are almost constantly enlarging the plant to meet their growing requirements. The latest addition is an extension of 60 feet to the machine shop, and equipping it with new and improved machinery.

The W. Dewees Wood Company, of McKeesport, Pa., manufacturers of patent planished sheet iron and steel, have broken ground for the erection of a new mill. The building will be 100 x 150 feet and will contain four sheet mills with all the necessary furnaces and other appliances It will be built on a piece of ground that has been owned by the firm for several years, and has not been recently purchased, as has been reported. The new addition will be completed and put in operation as early next year as possible, and will give the firm an output of from 18,000 to 20,000 tons of sheet iron and sheet steel per year.

The puddle mill of the National Tube Works Company, at McKeesport, Pa., has been closed down and will remain idle for about one month. It comprises 15 double puddling furnaces, which will be rebuilt for the use of coal.

The strike in the Pottsville Iron and Steel Company's rolling mill at West Hamburg, Pa., has been settled, and on Monday the entire mill resumed operations, giving employment to several hundred men. The strike started because the superintendent found fault with an imperfect billet of iron and refused to pay for its production.

A fire recently occurred in the rolling mill of the New Albany, Ind., Steam Forge and Rolling Mill Company, by which the building was damaged to the extent of $5000.

A movement is on foot in Elmira, N. Y., backed by the Board of Trade, to form a stock company for the purpose of operating the Elmira Rolling Mills. This plant has been idle since early last summer, when labor troubles caused it to be shut down. It is said that the owners of the rolling mills and blast furnace have agreed to sell both properties for $200,000. When run to their full capacity the works give employment to 400 men.

The St. Louis Wire Mills Company, of St. Louis, Mo., have purchased a tract of 12 acres at East St. Louis, Ill., on which it is reported they will locate a branch works.

The corner stone of the Nancey-Woodward iron furnace has been laid, with appropriate ceremonies, at Clarksville, Tenn.

The Spring Boiler and Mfg. Company, of Springfield, Mass., have just turned out their first boilers, for which they already have on hand a large number of orders from all parts of the country. The main structure of the new works is a two-story corrugated iron building 150 x 60 feet, alongside of which is now being erected a foundry 70 x 50 feet, with an 18-foot wing, built of brick. Employment will be given to about 75 men.

A machine shop and foundry is shortly to be erected at Rockford, Ill., for the manufacture of railway specialties. The main building will be 100 x 40 feet, two stories high, with solid brick walls

The Diamond State Iron Company, Wilmington, Del., manufacturers of railway supplies, refined and common bar iron, spikes, horse and mule shoes, &c., have recently added a foundry to their plant, and are now prepared to make iron and brass castings in addition to their other productions.

Falls Hollow Stay Bolt Company, Cuyahoga Falls, Ohio, manufacture patent mandrel rolled hollow stay bolt iron, hollow stay bolts and extra refined iron for special purposes. Their staybolt iron is referred to as being manufactured of solid material, going through a process of three welding heats, rolled and elongated over mandrels, not built up by putting one tube inside of another. These stay bolts are used largely by locomotive works and railroads.

Machinery.

The orders received by Bryam & Co., Detroit, Mich., during October were for 17 Colliau cupola furnaces, having a daily melting capacity of 664 tons.

The Mill and Mine Electric Equipment Company, of Pittsburgh, have just completed the equipment of the Summer Hill mines at Woodville, Pa., with a complete electric plant of electric mining machinery. The power plant consists of one 9 x 10 Junior Westinghouse engine, one 30 horse-power three-wire, four-pole Westinghouse alternating generator; six Hercules coal mining machines; a 12-foot Pollock fan, with a capacity of 30,000 cubic feet per minute; centrifugal pump, &c., the mining machines and pump being run by 3 horse-power Telsa motor. This is the second mine that this firm has fitted up in a similar manner this season, the first being the Monongahela Gas Company's mines at Wheelock Station, Pa. A careful record of the work of the mining machines in this mine from July 1 to August 8 showed that each cut represented about 1 1-10 tons of nut coal. It was found that it was impossible to keep the rooms cleaned up of the coal that was brought down fast enough to give the machines a chance to test their full capacity. Each machine is doing the work of from 12 to 14 picked miners.

The Trethewey Mfg. Company, of Pittsburgh, recently shipped to the Central Iron Works, at Harrisburg, Pa., an automatic shear knife grinding machine, also one to the Apollo Iron and Steel Company, at Apollo, Pa. These machines grind knives up to 10 feet in length.

At a meeting of the directors of the Union Switch and Signal Company, of Pittsburgh, held on the 3d inst., it was decided to remove the office of the secretary and treasurer from the present quarters in the Westinghouse building in that city to Swissvale, where the company's works are situated. The change is made in order to reduce expenses, as it will save the management about $8000 per year. The resignation of Vice-President C. H. Jackson was also acted upon, and E. H. Goodman, the present general manager of the company, was elected to the vacancy. He will perform the duties of both offices. C. H. Jackson has filled the position as vice-president ever since the company were organized, and was compelled to sever his connections with the company owing to his time being occupied with the affairs of the United Electric Light and Power Company, of New York, of which he is president and general manager.

A company has been organized at Pittsburgh to manufacture large meters for the measurement of natural gas. George W. Simonds is at the head of the company, and associated with him are John F. Scott, Oliver C. Pudan, Charles B. McLean and Thomas Woods. The machine shops of Sterrit & Thomas, in Pittsburgh, have been purchased, and the meter, which is the invention of Mr. Pudan, will be manufactured in these shops.

The Detrick & Harvey Machine Works, Baltimore, Md , have just put in a new Putnam engine and started up the machinery in the new extension. This increase in facilities will enable them to keep more nearly abreast of their orders.

The Westinghouse Machine Company, of Pittsburgh, report sales of engines for the month of October of 109 engines, with a combined horse-power of 5930. Among the principal orders for compound engines were the following: Three 200 horse-power, one 100 horse-power and one 35 horse-power for Denver; one 250 horse-power for Duluth; one 200 horse-power for Edge Moor, Del ; one 150 horse-power for Denver; one 100 horse-power for Amherst, Mass.; one 100 horse power for South Omaha, Neb.; one 80 horse-power for Pittsfield, Mass.; one 65 horse-power for San Francisco. Among the orders for Standard engines were the following: One 75 horse-power for Boston, Mass.; one 60 horse-power for Anderson, S. C.; one 45 horse-power for Hiawatha, Kan.; one 45 horse-power for New Britain, Conn.; one 45 horse-power for Washington, Pa. Among the orders for Junior engines were the following: One 75 horse-power for Readsboro, Vt.; one 75 horse-power for Amsterdam, N. Y.; one 50 horse-power for Wheeling, W. Va.; one 50 horse-power for Hopedale, Mass.; one 50 horse-power for Baltimore, Md.; one 35 horse-power for Sparta, Mich.; one 35 horse-power for Roanoke, Va.; one 35 horse-power for Ninton, Iowa; one 35 horse-power for Thurlow, Pa.; one 35 horse-power for Pontiac, Mich.; two 25 horse-power for Knoxville, Tenn. Among orders for foreign shipment were the following: One 125 horse-power compound and one 15 horse-power Junior for Spain; two 150 horse-power compound for France; two 100 horse-power compound for Australia; one 35 horse-power Junior for Germany; one 35 horse-power Junior for Cuba; one 5 horse-power Standard and three 4 horse-power Juniors for Holland.

J. H. Day & Co., of Cincinnati, Ohio, have recently received an order from the Garden City Sand Company, of Chicago, for a sand drying machine, with a capacity of 240 tons of sand daily. It will be constructed principally

of steel, with weight about 20,000 pounds. It is intended to be the best machine of the kind ever made in this country.

The new machine built under the patents of William Heckert, at the Kellogg Tube Works, is now completed, and the mill, which is located at Findlay, Ohio, is ready to start.

Hardware.

The Blymyer Iron Works Company, Cincinnati, Ohio, manufacturers of sugar machinery, steam engines, bells, &c., issue catalogues of these goods in English and Spanish, together with a sorghum handbook, a treatise on the sorgho and imphee sugar canes. The above company have lately purchased the Zimmerman fruit evaporator business, adding to it their sugar cane machinery plant.

Elbert White, Stamford, Conn., is still filling orders for chain, chain pumps, pump tubing, &c., but is making a specialty of manufacturing rubber buckets. Of these there are several kinds, prominent among which are his patent adjustable, patent A1 and patent Acme buckets.

The Standard Tool Company, Cleveland, Ohio, manufacturers of straight lip increase twist drills, sockets and chucks, solid and shell reamers, milling cutters, taps, patent drill grinding machines and special tools, advise us that they are very busy for this time of the year, but can fill their orders promptly.

The New England Specialty Company, North Easton, Mass., report an encouraging state of business. It is with difficulty that they keep up with orders for goods. They have increased their force of operators and added a dynamo to their plant. The latter will enable them to light their works while running nights.

J. R. Fletcher and F. H. Arnold, New Britain, Conn., have invented a coffin handle, which is referred to as being an improvement over anything of this description now on the market.

The A. F. Fowle & Son Company, silversmiths, have removed their plant from Newburyport to Greenfield, Mass., where they have a new factory with about 530 running feet of floor room. The buildings have been arranged with particular reference to their growing business.

The Wheel & Seeder Mfg. Company, manufacturers of agricultural implements, formerly of Fond du Lac, Wis., have removed their plant during the past summer to La Crosse, Wis., where they have built new works

Walter Smith & Co., Sharon Hill, Del., manufacturers of bell hooks, spring cotters, flat spring keys, riveted keys, hog and pig rings, shutter bowers, &c., have built several machines for the manufacture of these goods within the last year, and are able to furnish cotters from 3-32 inch to ¾ inch in diameter, and from ½ inch to 20 inches long; also the smallest and largest flat and riveted keys. They report business as having been good for the past year.

The Wayne Works, Richmond, Ind., have added a two story slate roof brick building to their factory, 35 x 65 feet, for the accommodation of their increasing business. They have closed a very satisfactory year, which, they state, has been the best in the history of their business.

The Udell Wooden Ware Works, North Indianapolis, report that they are very busy. Their orders are so far in excess of their regular output they find it necessary to work overtime to produce the required amount of goods.

In one day last week there was produced at the Beaver Falls mills of Carnegie, Phipps & Co. (Limited), at Beaver Falls, Pa., 1890 kegs of wire nails. It is said that this beats the record for production in any previous one day.

The Champion Mfg. Company Richmond, Ind., advise the orders for their lawn mowers already booked equal the entire output of last season, and that the outlook for a continued good season's trade with them is very bright.

We are advised by the Westcott Chuck Company, Oneida, N. Y., that in addition to the large and increasing sale of their chucks in this country there is also a good demand from Great Britain, Europe, Australia and South America. The following governments are purchasers of their chucks in large quantities: United States, British, French, German, Russian, Italian, Belgian, Swiss, Canadian and Australian.

F. W. Coburn, New Durham, N. H., has been manufacturing shoe knives, &c., for 35 years and has a factory admirably equipped. Besides the sale of goods in this country, they are sent to Australia, Germany and other export markets.

Miscellaneous.

Among recently authorized Illinois corporations are the following: Calumet Foundry Company, at Chicago, to do a general foundry business; capital stock, $30,000; incorporators, Samuel D. Walden, P. L. Mulvane, W. K. Lawrey. American Conduit and Traction Company, at Chicago, to make electrical conduits, &c.; capital stock, $1,000,000; incorporators, H. B. Hallock, H. M. Day, C. P. Chapman.

Crown Smelting Company, Chester, Pa., sole manufacturers of Crown Bronze and brass and composition metal castings, have removed from Lamokin Station, and are now located in their new establishment, situated corner Concord avenue and the main line of P. W. and B. R. R. The establishment is a model of its kind, and includes a building 58 x 250 feet, devoted to the storeroom, molding department, &c., with a wing 55 x 65 feet, used as the furnace room, and a commodious office building adjoins the main structure. There are 14 furnaces with a capacity of 700 pounds each, and one air furnace with 10,000 pounds capacity, which makes the entire output about four times as great as formerly. The method of pouring the metals and handling the heavy castings is both convenient and rapid. Two large Yale & Towne cranes are located in the furnace room, and in the other department are two 1 cranes of 5 and 15 tons capacity, both of which are used in connection with the Harrington system of overhead tramways. The company are meeting with much success in frame and heavy machinery castings of composition metals, of which they make a specialty.

Pecora Paint Company, S. Bowen's Sons, successors, manufacturers of Iron stone cement, roofing and other paint specialties, formerly located at 150 North Fourth street, Philadelphia, have removed to their new establishment, Fourth and Venango streets, at junction of Philadelphia and Reading and Pennsylvania railroads. The building is a substantial structure 40 x 150 feet, constructed on the most approved plans, and consisting of four stories and a basement. Each floor is 13 feet to ceiling, with large windows on every side of building, affording an abundance of light and ventilation. Extra precautions against fire are observed, in the fact that not an aperture is found in the floors of the entire building. The elevator and belting shafts are walled in separately, and with iron fire proof doors, shutting off communication with the main building. The belt shaft arrangement is rather novel, and is an adoption of an English method. A space under the main roof is devoted for this purpose; it is blocked up on all sides, lighted by windows and access only gained by a small door in the basement. In this space is the main belt, running from the basement to the fourth floor, and connected with pulleys to shafts running through the walls; thus motive power is furnished to each floor separately. The fire appliances are excellent, embracing hand rope escapes at every third window, and on every floor are several water attachments, with 20 feet of hose to each, ready for immediate service, connected with two tanks, of 2500 gallons capacity each, on top of building. Also an extra fire pump in the basement, to be used in case of emergency in giving additional pressure on the water. The water from the tanks supplies the boilers; this is forced up by a pumping engine from an artesian well in the basement. Another important feature in the construction is the utilization of the Sturtevant blower system for heating the entire building, whereby the air in the rooms is changed about every 20 minutes. The fresh air is conveyed from outside the building through a duct and drawn over the exhaust steam pipes and converted into hot air, then wafted throughout the building. In winter an even temperature of 70° F. can readily be maintained. By the same blower system a temperature of 110° F. can be obtained in the drying rooms, if required. The general business and private offices are spacious and handsomely furnished, and the sanitary arrangements are excellent—the comfort of the employees being liberally provided for, with hot and cold water, shower baths, &c. Light is furnished by their own electric light plant—the incandescent system. The business was established in 1862 by the late Smith Bowen and successfully carried on until his death in 1886, when his two sons, S. B. and J. B. Bowen, succeeded him, both of whom were brought up to the business from boyhood. The increase in business during the last four years rendered the old quarters entirely inadequate. The new plant will just double the capacity of the old establishment.

The Anchor Coke Works, in the Connellsville region, formerly owned by the Pennsylvania Mining, Manufacturing and Supply Company, have been sold at private sale for $23,300 to the H. C. Frick Coke Company, of Pittsburgh.

J. G. Butler, Jr., George Tod, A. J. McCartney, H. H. Stambaugh and T. E. Young, of Youngstown, Ohio, with other capitalists have purchased 1200 acres of coal land near Monongahela City, Pa., on the line of the McKeesport and Bellevernon Railroad, and will proceed to develop it. The purchase price was $75,000. A portion of the land is on the river front, and also accessible to the railroad.

We are advised that the report that an Eastern syndicate had obtained an option on the plant of the Ensign Mfg. Company, car builders, at Huntingdon, W. Va., is without foundation.

M. E. Keeley, dealer in machinery and metals, Waterbury, Conn., has recently added to his business a smelting and refining plant, which is conducted under the name of the Waterbury Smelting and Refining Company.

The Utah Mining and Irrigating Pump Mfg. Company, with a capital stock of $150,000, have been incorporated at Salt Lake City, Utah.

The capacity of the car shops of the Chicago, Milwaukee and St. Paul Railway Company, at West Milwaukee, Wis., is to be increased from three to ten cars a day. The improvements will cost $200,000, and when completed will give employment to 200 additional hands. The entire plant will also be remodeled, and an addition of 150 x 100 feet will be added to the planing mill, which will be supplied with entirely new machinery.

The new machine shops of the Southern Pacific Railroad, at El Paso, Texas, have been completed.

Gardiner C. Sims, of the Armington & Sims Engine Company, of Providence, R. I., and chairman of the Committee on Electricity, Electrical and Pneumatical Appliances of the World's Fair, estimates that $750,000 will be saved if the motive power of the exposition is furnished by electricity. The saving will be in shafting, belts, &c., which would be necessary were steam power used direct. In a recent communication to the Executive Committee of the National Commission, Mr. Sims suggests, among other things, that a large building be constructed that shall contain boilers, condensers, pumps and dynamos. From this station, where the electrical power is generated, the current could be taken and distributed to its objective point by some underground system or systems, there to do the work required either for lighting, power or heat. He further suggests that suggestions be invited from the leading electrical engineers of the country in regard to electrical affairs, which, considering that Mr. Sims is not an electrician himself, is a very sensible idea. It is estimated that anywhere from 50,000 to 100,000 incandescent lamps will be used to light the interior of the different buildings, a large proportion of which will be required for decorative effects. Of arc lights it is thought that 2500 will suffice for the grounds and everything. No estimate at this time can be made of the number of motors which will be required, or their maximum horse-power.

Volney W. Mason, of Providence, R. I., is the inventor of a machine for unloading lumber and other freight from vessels. The machine is called a drum and is run by electricity. The Rhode Island Lumber Company have introduced the scheme at their wharf on India street. The machine has three drums, which operate two derricks, and a central line which runs to the hold of the vessel. The power is furnished by a Thomson-Houston electric motor of 10 horse-power. The capacity of the motor is 500 volts and makes 1600 revolutions to the minute. A belt connects the motor with the shaft which operates the drums. The power is transferred to the drums by what is called a paper friction. Each drum is operated by a lever, and can be stopped in an instant. The motor is a self oiling machine, a drop of oil falling on the bearings every 30 seconds. When the lumber is drawn from a vessel a large hook from the wharf derrick is attached, and the sticks are transferred to any part of the yard. The entire pulling, twisting and transferring is done by the electric power. It is a great labor and time saving machine, and is the only one in operation in this city.

THE WEEK.

Many Cubans are leaving the island to colonize in foreign countries.

There are upward of 900,000 square miles in South America where india rubber flourishes. On the Amazon River there are 25,000 squares miles, and in the valley of the Orinoco there is another vast tract which grows rubber, scarcely distinguishable from fine Para. Numerous cataracts and long portages are the principal difficulties in collecting the gum.

A Boston copper company learn, as the result of inquiry through Connecticut, that manufacturers are as busy as at any former time and that the metal is fast passing into consumption.

The business in which the American Oil Company are interested amounted last year to $23,750,000, and the accumulated profits are put down at nearly $4,000,000. The sum of $1,000,000 was expended for enlargements and new machinery.

The Holly Mfg. Company contest the award recently made by the St. Louis Water Board to Henry R. Worthington, of New York, for pumping engines, on the ground that the bid was not in strict compliance with the specifications.

Merchants and cattle men in Texas are suffering from the impossibility of procuring sufficient railroad cars.

St. Charles, Mo., has a car company employing 1200 hands and doing a business amounting to $2,500,000 per annum. Its foundry for car wheels is extensive.

The opening of a large pork packing house at Fort Worth, by parties from Chicago and Kansas, is supposed to mark a new era in the cattle industry in Texas.

The population of Victoria, in British Columbia, which in 1881 was only 7300, is now put at 22,000. According to the report of the Board of Trade the growth of population has been accompanied by a corresponding increase in the value of real estate.

Scranton claims that the immense piles of culm and dirt from anthracite coal mines about that city are as valuable to a manufacturing center as natural gas.

The new Temple Beth-el, to be erected on Fifth avenue and Seventy-sixth street, will have a copper dome surmounting a tower 140 feet high, andthe roof and framework of the dome will be of iron. The entire cost of construction will be $400,000.

The Vermont Supreme Court has recently decided that railroad pools are legal when the rates charged are reasonable. The terms of the decision are in line with the argument of Chairman Walker, of the Interstate Commerce Railway Association, and Judge Springer, of the Atchison, concurs. He says: "I certainly do not believe a railroad pool will ever be declared illegal if, under its workings, all shippers are treated fairly and alike and reasonable rates are maintained. So certain are we of this that we offered and are still willing to join a money pool, instead of one dividing the traffic. It is agreed by every one that maintained rates are better for the shippers and the roads. It has been demonstrated that rates cannot be maintained without pools. We have good authority now for saying that pools are not illegal, and hence are more willing than ever to join them. If the pools were everywhere in vogue the roads could add millions of dollars to their net earnings, which the public would give in interest, and dividends and improvements in car service. All this, too, without raising a rate. The infinity of agencies now maintained could be abolished, and retrenchment had in a score of ways. The foreign agencies of the Union Pacific alone cost over $400,000 a year, and that is but a sample of what all roads must spend. I see no reason why pools should not be established as freely as they were in the days before the Interstate Commerce act."

Reports from the new cruiser Baltimore, at Lisbon, Oct. 21, say that she maintained a high speed, varying from 14½ to 16 knots an hour without difficulty or risk in heavy seas for two consecutive days, showing sea going qualities of a high order.

With a complete rearrangement of all the sub-surface works in Broadway at one time and by one contractor, it is expected that the tearing up of the Broadway pavement will be rendered unnecessary for a great many years to come.

The change of tracks by the consolidated railroads, at Bridgeport, Conn., together with the construction of a new depot, to avoid grade crossings, will cost $1,500,000.

The Chinese have conceded to England the right to send steamers to Chung-King, the great city of Se-Chuen on the upper Yanktse-Kiang, on condition that England relinquish her claim to the right to navigate the upper Yanktse by steam.

The New York Chamber of Commerce adopted resolutions opposed to the relinquishment of extra territorial rights in Japan, as proposed in the pending treaty between that country and the United States. Under these rights foreigners in Papan are subject to the laws of their own country rather than to the local administration.

The council of the nautical school at this port recommend that the management of the school be transferred to the shipowning interests of this port, in order that its usefulness may be extended.

The American Federation of Labor, to meet in Detroit December 8, boasts of a membership of 1,500,000.

When the international railway tunnel at St. Clair River is completed early in February, a banquet table 1000 feet long will be prepared for the formal opening and be so arranged that the chairman will be seated exactly on the boundary line, with representatives of the American and Canadian governments on either side.

Building the lock and dam at Rock River, the west end of the line, will be the first work done on the Lake Hennepin Canal. The appropriation is $500,000.

The Wilmington shipbuilders have chartered a ship to bring a cargo of Canadian lumber from British Columbia, the first shipment of its kind from the Pacific Coast, with one exception.

Boston commerce during the last nine months shows an increase of $450,000 in imports and a decrease of $400,000 in exports compared with last year. Each item amounts to about $52,000,000.

Captain Emory, U. S. N., says Behring Straits can never be bridged on account of the irresistible flow of icebergs; that a railway tunnel is the only resource.

Australia's wool export last year amounted to 1,162,600 bales, the product of 105,000,000 sheep. The average profit per head on improved land is 61 cents.

The Interstate Commerce Commission has decided, in the case of Capehart & Smith, steamship owners, *vs.* the Louisville and Nashville and other roads, that it is not unjust discrimination for a road to make through bills of lading and through rates with one steamboat line and not with another. In Iowa the Attorney General is about to proceed in court against a number of railroads which have refused to obey the recent order of the Railroad Commissioners as to joint rates.

Following the example of the English shipowners, the German shipbuilders and owners have resolved to form a master league to combat the workmen's unions.

Cotton valued at nearly $11,000,000 was shipped from Galveston in October, surpassing the phenomenal shipments of the previous month.

The Pittsburgh Chamber of Commerce formally denies that overtures have been made to Welsh tin plate makers to establish themselves in the United States. The chamber is confident that tin plate will be made in this country, but has no expectation of seeing Welshmen transferring their plants to this side of the Atlantic.

It is said that Brazilian ships would burn American coal if it could be laid down in Para at the same rate they pay for Yorkshire. The average cost in Great Britain is 14 shillings per ton. The Amazon Steam Navigation Company, owning 30 steamers, which consume 2000 tons per month, tried one shipment of American double screened coal obtained from New York by steamer at a cost of 35 shillings. It was reported good steamer coal—"swifter" than South Wales. The difference against American coal was about 2½ per cent. There is a disposition among the steamboat people to try American coal and competition is invited.

The Government engineers passed a steam vessel through the Mussels Shoals Canal on the Tennessee River a few days ago, and the formal celebration of this great work will be held November 12. The canal opens navigation from Chattanooga, Tenn., to the Ohio River.

The Spanish consul at Key West has closed his office on account of the "excitable condition of Cuban refugees" in that city, and holds the United States Government responsible for the security of the consular buildings.

Negotiations are said to be in progress for the purchase and transfer from the lakes of a number of steamers adapted to the coastwise coal trade.

The Reading Railroad will connect with Arthur Kill, on Staten Island Sound, by building 20 miles of new track, to cost $2,000,000.

PROVIDENCE MISCELLANY.

At the instance of a Southern iron company, a writ of attachment for $6000 has been served upon an engine manufacturer of Providence. The difficulty arises over a disputed claim. A representative of the engine company states that the company ordered 1000 tons of what is known in the trade as No. 2 foundry iron, through the agents of the iron company. The agents forwarded the order to the principal, who delivered the No. 3 iron, a harder and cheaper grade than that required by the engine builder. The agents shipped the iron to Providence, and the bills of lading are sent to the engine company with the price for No. 2 iron. The latter used the iron as No. 2, and found that it required a much longer time to make the castings, and that they were so hard that the tools were destroyed. As a consequence, the filling of orders was delayed, the men were worked overtime, and it was found impossible to use a great part of the supply. The engine company had been paying right along for No. 2 iron, and they claim that the damage sustained by them by the use of the No. 3 iron was three or four times greater than the amount of the bill from the iron company. They have received of the 1000 tons ordered about 466 tons, the greater part of which is No. 3 iron. After their discovery that the iron was of the No. 3 grade, they notified the agents of the iron company that they should insist upon having their inspector test the iron at the dock, but claim to have received no satisfactory reply. They accordingly propose to bring a counter suit for the damage sustained by the use of inferior grade of iron, which was represented to be of the same quality as previously sold to them.

The Iron Age

New York, Thursday, November 13, 1890.

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The Financial Flurry.

A disturbing element affecting the financial situation, and to a certain extent prejudicial to business interests generally, is the panic-like condition of Wall street, growing out of the shrinkage in the value of securities that has been continuous for several weeks. A culmination seemed to have been reached on Monday, when a crisis was precipitated by advices from London indicating a strained condition of the money markets of Europe, to which was added a bad statement from the New York local banks showing a decrease of nearly $3,250,000 in legal reserve, for which it was difficult to account. By common agreement a certain leading stock operator was credited with "rigging the market," in furtherance of a big speculative deal. Important changes supposed to be pending in the Western railroad situation were referred to in support of this view. However this may be, an observer in the stock market figures up a shrinkage in 23 leading stocks equal to at least $80,000,000 within the week. Such figures, of course, deal only with book values. They do not represent actual losses. Still the balances in bank accounts have been rendered very slender in the case of a good many speculators, and of that large class of men who operate in stocks besides carrying on their regular business. The number of the latter is, however, probably much smaller now than it has been for a good many years, and the business community is not likely to suffer much directly. But although the interest of the general public in Wall street has not been large, speculation throughout the country has been more active than is generally believed. It is not so readily measured as it was when each day's transactions in stocks in Wall street told the tale each day. Money has been put into many outside ventures. We may quote alone the real estate speculation in the South. Anything which tends to check the rise in ventures of that character, like the present financial position, makes it practically impossible to realize, and the money once put in is practically locked up, if indeed it is not lost. It means a cessation of expenditures for improvements, which to some extent must affect the iron, steel and allied trades.

But the sharp decline in railroad stocks and bonds must have its most direct and far-reaching effect upon the iron trade in another way. It will be difficult, if not practically impossible, for the next few months to float in any new railroad enterprises. When capitalists are busy protecting what they have, and are concerned in seeing values return to former purchase prices, they are not in a mood to listen to new schemes however tempting. This means that the demand for track material and equipment for new mileage is not going to be heavy. The rail mills cannot look forward to a rush of orders; in fact, the danger is that the meager amount of winter business is threatened with some diminution. The mills may succeed in avoiding reckless competition for trade, which no temptations in the way of low prices can possibly bring out. But a small business on their part puts pressure on pig iron, on mild steel and other crude materials, which, in turn, is reflected in the price of finished goods in other lines. Production is very large, but thus far consumption has been quite as heavy. If the latter drops off, as it threatens to do, then the former must be restricted.

It is well known that even now in different parts of the country producers have reached the point where it is a question whether it is wiser to close down at once, or to go on with the certainty of a loss in the immediate future, on the chance of a recovery before long. The happenings of the past few days are certainly not encouraging to those who are inclined to take sanguine views.

American Sheet Mill Practice.

According to the opinions of some expert English sheet iron manufacturers who recently visited this country, our sheet-mill practice is open to criticism. They claim that our sheet iron works are not operated so economically as theirs and that our output is not so large as that of English mills of the same capacity. They were somewhat surprised to find this the case, after witnessing the remarkable achievements of our blast furnace builders and our steel works engineers. At our blast furnaces and in our steel works they found every pains taken which the most careful forethought could suggest to save fuel and to save labor. In that direction our work was so much in advance of theirs that they were forcibly struck by the contrast presented in the sheet mills, which they assert they found still using methods known in England as the old practice. In a discussion with one of these gentlemen upon this point, mill after mill was taken up and its methods were fully explained, showing that the criticism was not made at random, but after a tolerably full examination of the best known American sheet mills. If these strictures are correct, it is time that our sheet iron manufacturers not only knew it but that they realized the situation. If they have been content with following antiquated methods it is time for them to wake up. If our sheet mills are painfully deficient in any way our bright millwrights should at once give the matter their earnest thought, with the determination to make American sheet mill practice as notably progressive as our steel works practice. They cannot afford to be lagging now. If these visitors have discovered serious defects in American methods of rolling sheets they could not have done us a better service than by calling attention to those defects. We would be glad to hear from our sheet mill proprietors and managers on this point, and invite a free discussion of the topic, in the hope that the exact situation will be set forth and remedies suggested, if our people are really lagging behind other nations in this important particular.

The Price of Coke.

The Western manufacturers of pig iron are becoming restive under the high price charged for Connellsville coke. It was rumored as far back as August that the price of coke was being cut to some Mahoning Valley furnacemen, but the rumor was shown by the best evidence, that of subsequent events, to be incorrect. When the price of pig iron drooped and ore declined a trifle, it was expected by furnacemen that coke might sympathize. But the coke producers have command of the situation, and have been able to bid defiance to adverse influences. The management of the Connellsville coke trade has been unquestionably superb, and must excite admiration, even among those who would like to see the price of coke reduced. They would be only too glad if their own business were susceptible to influences of the same character. Not being so well situated, however, and suffering from a gradual wasting away of prices, until their operations show no profit, they regard coke as disproportionately high. They cannot see any justification in coke producers maintaining prices on the basis of $20 to $21 pig iron, when the price of that iron has fallen to $16.50. Most iron manufacturers are willing to see those who furnish them with material make a reasonable profit, and there are but few who hope to see the days of 90-cent coke return. But, between 90 cents and $2.15 there is a wide expanse, which means a very considerable profit to the coke producer, and the remission of a part of it might give a suffering furnaceman a little relief. It may be urged, however, that the furnaceman would immediately give it away to his customers, as that is the practice of the trade on a declining market.

Profit sharing with employees appears to be growing steadily in favor among manufacturers. Another large Chicago establishment announced its adoption last week. Of course the millennium has not yet dawned, and a new dispensation cannot be predicted merely because some converts have been made, but it is certainly gratifying to note the increasing disposition of employers to cultivate pleasant relations with their workmen. And in no way can pleasant relations be cultivated with a surer prospect of getting a good crop than through the agency of a substantial pecuniary benefit. This does not imply mercenary motives on the part of a workingman any more than in the case of any other

class of people. All are striving for the mighty dollar because of the advantages to be gained by its possession. Profit sharing must necessarily make a workman take a deeper interest in the operations of the concern employing him than if he merely received the market rate of wages, no higher and no lower than those paid in other works around him.

Fuel Gas.

The country looks to Pittsburgh for a practical settlement of the fuel gas question. If the manufacturers of that city, whose supply of natural gas has been summarily cut off, revert to the use of coal without a serious attempt to secure cheap fuel gas, their action will be accepted as strong evidence that gas is really not superior to coal for metallurgical purposes. This would seem to be at variance with the conclusions reached after a long trial of natural gas in many Pittsburgh establishments. When natural gas began to be used for raising steam, for operating puddling and heating furnaces and for melting steel, the general testimony of those who could secure a supply, was that it proved to be a most admirable fuel, being so easily controlled and enabling just the precise heat to be secured when needed and maintained, with uniformity as long as it was wanted. So enthusiastic in the praises of gas were the first users that they asserted that practically a new education had been imparted to iron makers, and if through any accident the natural supply should be cut short that those who had once realized the advantages of gaseous fuel would not again turn to the use of raw coal.

At that time the permanence of the supply of natural gas was by no means established to the satisfaction of consumers generally, so that it can safely be presumed that just such a contingency as that which has recently happened at Pittsburgh was anticipated by the enthusiastic believers in the superior qualities of gaseous fuel.

The use of natural gas at Pittsburgh has also continued sufficiently long to make every manufacturer thoroughly familiar with the method of handling it. The people of that great manufacturing center have been accustomed to the use of gas as no other set of people ever were. If there is any drawback to its use, or, on the other hand, if there is any extraordinary advantage gained by having fuel in such a form, the people of Pittsburgh may be presumed to know all about it. Both natural gas and artificial gas are used in a number of other localities by iron and steel manufacturers, it is true, but not to the extent or for the length of time that gas has been used at Pittsburgh.

If, now, the manufacturers of that locality quietly reinsert the grates in their furnaces and in a wholesale way resume the consumption of coal in its raw state, as before the era of natural gas, that will settle the gas question to a considerable extent. The advocates of artificial fuel gas will have the weight of this apparently unfavorable action with regard to the use of that fuel operating against them, as it will naturally be assumed that the Pittsburgh manufacturers would instantly turn to artificial fuel gas if it could be cheaply produced, and if they were thoroughly satisfied that gas has decided advantages from a metallurgical standpoint over the use of raw coal.

This is, or should be, a great opportunity for the designers of fuel gas apparatus to demonstrate the efficiency of their methods. It is a contingency which they have had in view and which has been awaited by some of them with a great deal of anxiety. A short supply of natural gas, or the concentration of the supply to meet the wants of domestic consumers, was expected to divert attention to fuel gas produced artificially. Should the Pittsburgh manufacturers adopt artificial gas appliances rather than permanently resort to the use of coal, it will not be long until iron and steel establishments in other parts of the country follow their example. If such methods are good for Pittsburgh they are good for other sections. The outcome will be watched with considerable interest.

An important question for the people of Chicago, which was settled at the election on the 4th inst., was one wholly outside of partisan politics and strife for office. A constitutional amendment had been submitted for ratification to the people of the State of Illinois, empowering the city of Chicago to issue bonds for $5,000,000 to aid the World's Fair of 1893. This action was rendered necessary, as Chicago had already borrowed for other purposes up to the full limit of its municipal privileges under the State constitution. The vote on this question was overwhelmingly in favor of enabling Chicago to raise the $5,000,000 desired. There is no doubt whatever that the City Council will act promptly with this permission given them and that the World's Fair can therefore be said to have been put in possession of ample funds to make the exposition a grand success. The subscriptions from individuals and corporations were in excess of $5,000,000, so that there will be more than $10,000,000 available. It is worthy of mention in this connection that the political managers of the several parties adopted a shrewd scheme to get a full vote on this question, and also to insure a favorable vote. All the tickets, so far as now known, were printed "for the constitutional amendment," instead of being printed, as is usually the case, "for" and "against," and leaving the voter to exercise his choice by crossing one line out. Many voters in such cases leave both stand, not comprehending their purpose, and thus rendering their vote nugatory. Few voters would take the trouble to write "against" instead of "for" unless they were bitterly hostile to the scheme, and that is not the case in Chicago and throughout Illinois, the sentiment being practically unanimous not only of having the World's Fair, but also of giving it the proper financial support.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., November 11, 1890.

The political inundation which has swept over the country has been the theme of earnest comment and speculation during the past week. Various causes are assigned for the extraordinary outcome, and among them conspicuously the so-called McKinley bill. The original McKinley bill of the Committee on Ways and Means was emphatically a manufacturers' bill, having been compiled largely upon their presentation of what they wanted. This was notably the case in reference to the metal schedule, which was substantially prepared by a committee of the Iron and Steel and other metallurgical associations. In the Senate Committee many of these rates were materially changed, and a general reduction was made on some articles. The same facts will apply to other schedules.

Among the Republicans there is much criticism of Secretary Blaine's course. Early in the tariff controversy he uttered the fatal statement that there was not a line or a word in the McKinley bill which was in the interest of the farmers. This utterance upon so high an authority was placarded all over the West, and in his speech at Canton and in Philadelphia he did not make a single effort to correct or explain his saying. It was that which did the work in the agricultural districts.

The most important part of the whole affair is that the new law which was intended to stand for at least a decade, and under which industries were expected to go on with marvelous expansion undisturbed by ceaseless agitation, is confronted on the very threshold of its application by an overwhelming hostile majority in the lower House and an element of doubtful support in the Senate. The tariff reformers, indifferent to the effects of agitation upon mechanical industries, are already proclaiming their purpose to move against the new law by gradual approaches. They intend to permit the law to stand in its entirety as an objective line of attack upon the protective system, and will concentrate their efforts upon the weaker points of defense first.

A number of Senators and Representatives who entertain reform ideas who are in Washington have had several conferences upon the line of policy to pursue. They indicate a determination to protract debate upon Republican measures which will be brought forward at the approaching short session in order to prevent action upon the appropriation bills, thus forcing the President to call an extra session. They claim that the results of the recent elections are by no means conclusive, and as the issue will be the feature of the campaign of 1892, the sooner they begin their movements the better.

Without an extra session the proposed reform movements cannot be inaugurated until January, 1892, on the very eve of the Presidential election, which would not afford time for the people to thoroughly understand the questions involved. If the country wished to eliminate the tariff from national politics they adopted a very unfortunate method of accomplishing that result. From now until the close of the Presidential campaign in November, 1892 ceaseless tariff agitation may be anticipated. The first attack will be on the line of free raw material, as coal, iron ore and binding twine, lower duties on pig iron, free tin plate, steel rails and cotton ties. These are the lines upon which the new law will be first attacked.

The champions of the new tariff in the present Congress who survived the flood of last Tuesday insist that they will not retreat, but will keep the standard of

protection to the front. The narrowing down of the Senate majority and the shakiness of Plumb, Paddock and Pettigrew make it very uncertain as to the ability of the Republican majority to stem the tide The tariff as a high protective measure is unquestionably menaced by greater dangers than ever before, and much careful management and hard work will be necessary to prevent some bad break in the barriers which have hitherto repelled the flooding of the American markets with foreign products.

The vigorous methods applied by the new Board of General Appraisers in the construction of the tariff statutes is not only resulting in the abolition of the old system of nullification of the tariff statutes by undervaluations, but is giving rise to considerable controversy between the appraisers and the importers.

A New York firm, taking exception to the exaction of duty on certain coverings of the merchandise in question, strikes back by controverting the constitutionality of the board. The general appraisers, in vindicating the constitutionality of their acts, evolve a declaration which will stand against this style of argument on the part of the importers until the question is tested in the Supreme Court of the United States, which is the most probable outcome of this clashing of tariff construction. The Board of General Appraisers in their own behalf say:

The language of the statute is explicit on the subject of the dutiable character of coverings, and the board has so held. The importer in this case assails the constitutional validity of the act of Congress, approved June 10, 1890, entitled, "An act to simplify the laws in relation to the collection of the revenues." It is by virtue of the provisions of section 12 of this law that this board derives its existence. It was organized under that law. Its members were appointed by the President of the United States under the authority there conferred. Its right to sit and decide this case is based on the supposed validity of the act. It does not become a tribunal to make a decision and at the same time assert its want of legal authority to make it. The principle of legal estoppel applies to close its mouth against annulling the law of its organized existence. Accordingly we decline to enter upon any argument touching this feature of the case. In addition to this, the legal questions raised are fully covered by the decision of this board heretofore made.

The reappraisements of value by the United States General Appraisers continue to be a powerful argument, showing the extent to which these evasions of American tariff statutes was carried out under the old system. Although the board has been fairly in operation but about three months, nearly 1000 reappraisements have been made, the majority being on cotton, silk and woolen fabrics.

PERSONALS.

One of the latest resignations from the United States Engineer Corps is that of Passed Assistant Engineer Henry W. Spangler, who will now be permanently connected with the University of Pennsylvania as professor of mechanical engineering.

Chief Engineer Robert B. Hine and Passed Assistant Engineer Edward R. Freeman, who have been on duty at the Delaware River Iron Works superintending the building of the machinery for the gunboats Concord and Bennington, have been ordered to New York for duty in the preparation of the Concord for sea.

William Porter has recently been appointed general manager of the Chester Foundry and Machine Company, Chester, Pa., vice Albert E. J. Jenkins, resigned. Mr. Porter was formerly connected for over eight years with the Colwell Iron Works, Carteret, N. J., but was more recently located in New York.

CURRENT PIG PRODUCTION.

The month of October has not brought changes which materially affect the total current pig iron production of the country. We are still making iron at a rate which will take us close to 9,000,000 gross tons. As compared with previous months the record stands as follows:

	Furnaces in blast.	Capacity per week. Gross tons.
November 1	342	177,958
October 1	336	179,268
September 1	323	171,776
August 1	324	164,798
July 1	336	175,727
June 1	345	180,791
May 1	344	180,099
April 1	344	178,474
March 1	343	180,991
February 1	334	173,651
January 1	333	174,038
December 1	328	169,151
November 1	323	165,225
October 1	311	151,057
September 1	294	134,068
August 1	286	145,899
July 1	285	141,419

The capacity of the coke furnaces blowing was as follows:

Coke Furnaces, November 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	4	1	1,100	3	2,750
Pennsylvania:					
Pittsburgh district	21	16	22,872	5	5,906
Spiegel	2	2	1,792	0	0
Shenango Valley	19	16	11,938	3	2,353
Juniata and Conemaugh Valley	17	10	5,798	7	4,075
Spiegel	1	1	500	0	0
Youghiogheny Val	5	2	872	3	1,454
Miscellaneous	4	3	1,833	1	700
Maryland	5	2	3,640	3	3,850
West Virginia	6	3	2,512	3	770
Ohio:					
Mahoning Valley	14	11	8,663	3	2,350
Central and Northern	18	15	11,695	3	2,490
Hocking Valley	14	6	2,040	8	1,870
Hanging Rock	14	6	1,575	8	1,182
Indiana	2	2	370	0	0
Illinois	14	14	14,550	0	0
Wisconsin	4	4	3,067	0	0
Missouri	6	1	670	5	2,670
Colorado	2	1	450	1	430
The South:					
Virginia	12	11	5,920	1	250
Kentucky	4	3	825	1	310
Alabama	37	26	14,798	11	5,890
Tennessee	11	10	4,640	1	610
Georgia	2	1	310	1	460
North Carolina	1	1	125	0	0
Totals	239	166	122,555	71	40,350

As compared with previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
November 1	178	122,555
October 1	170	127,247
September 1	156	119,757
August 1	150	113,040
July 1	163	120,673
June 1	167	123,340
May 1	169	122,489
April 1	173	121,560
March 1	169	122,595
February 1	169	118,568
January 1, 1890	169	119,396
December 1	162	116,319
November 1	160	112,209
October 1	154	102,454
September 1	141	96,744

Troy has two of its furnaces out undergoing relining. The falling off in the Pittsburgh district was notable, being due to the blowing out of one of the Isabella furnaces for repairs and one of the Soho furnaces, of the Moorhead McCleane Company, for the same reason. Furnace B, of the Edgar Thomson plant, was out on the 1st inst., but has since blown in again. In the Shenango Valley production continues at a very heavy rate, some of the furnaces making particularly good records. Among them we may note Rosena and Neshannock. In the Juniata Valley the Cambria Iron Company have blown in their second Blair furnace. Otherwise there have been no changes of consequence among the coke plants of Pennsylvania.

In Ohio Dover resumed during October. Otherwise the same producers have been engaged in making iron. We have no changes to report in Illinois, Wisconsin or Missouri, but may note in connection with the latter that at an early date Jupiter is expected to go out of blast, and then not a single coke furnace in Missouri will be at work.

In the South the changes have been few indeed. Dayton had only one of its furnaces in blast during a part of the month, but is now running with both of them.

The status of the anthracite furnaces are as follows:

Anthracite Furnaces, November 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	23	8	3,167	15	3,775
New Jersey	14	6	2,980	8	2,855
Spiegel	3	3	217	0	0
Pennsylvania:					
Lehigh Valley	45	34	13,639	11	3,880
Spiegel	1	1	75	0	0
Schuylkill Valley	37	21	8,952	16	4,340
U. Susquehanna Valley	17	11	3,695	6	2,510
Lebanon Valley	16	10	4,601	6	2,310
L. Susquehanna Valley	17	9	4,550	8	1,910
Spiegel	1	1	325	0	0
Totals	174	104	42,141	70	21,580

For the past 16 months our records show the following:

	Furnaces in blast.	Capacity per week.
November 1	104	42,141
October 1	100	38,627
September 1	104	39,115
August 1	106	41,013
July 1	112	42,543
June 1	117	45,142
May 1	123	46,912
April 1	119	46,110
March 1	115	45,790
February 1, 1890	107	43,905
January 1, 1890	105	42,857
December 1	100	40,053
November 1	96	40,603
October 1	94	36,558
September 1	93	35,997
August 1	88	34,277

The changes during the month have not been numerous, but have tended on the whole to a considerably increased output. New York has added the second Poughkeepsie to its active plants. In the Schuylkill Valley No. 1 Phoenix has been running during the greater part of the month. In the Lehigh Valley No. 1 Hokendauqua has gone out for repairs during the month, but the majority of the other producers in the valley have shown unusually heavy totals of make. On the Lower Susquehanna, Chestnut Hill, after having been banked for three months, blew in on October 5, and Robesonia, a very large furnace, started on the 1st inst.

The capacity of charcoal furnaces producing was as follows:

Charcoal Furnaces, November 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England	14	7	570	7	620
New York	8	3	386	5	523
Pennsylvania	16	6	710	10	390
Maryland	6	2	310	4	380
Virginia	18	4	192	14	680
Ohio	11	7	496	4	170
Kentucky	1	1	91	0	0
Tennessee	6	4	896	2	130
Georgia	3	2	210	1	70
Alabama	14	11	2,214	5	780
Michigan	27	15	4,351	12	3,420
Missouri	2	2	634	0	0
Wisconsin	6	3	1,526	3	555
Texas	2	1	170	1	70
California	1	0	0	1	120
Washington	1	1	170	0	0
Oregon	1	1	336	0	0
Totals	137	70	13,202	67	7908

As compared with previous months the record stands as follows:

	Furnaces in blast.	Capacity per week.
November 1	70	13,262
October 1	66	13,389
September 1	63	12,904
August 1	59	10,745
July 1	61	12,511
June 1	61	12,312
May 1	52	10,698
April 1	52	10,804
March 1	59	12,006
February 1	58	11,378
January 1, 1890	59	11,485
December 1	66	12,779
November 1	67	12,893
October 1	63	12,047
September 1	60	11,327
August 1	61	11,902

In Massachusetts Richmond has blown in a second furnace. In Maryland Muirkirk has blown out to repair its lining, and one of the furnaces of the Maryland Company is expected to go into blast at an early date. In Virginia Reed Island has been added to the list of active furnaces during October. National Furnace, in Wisconsin, blew out October 15. In Alabama, Attalla, of the Southern Iron Company, ran during the greater part of October.

The Effect of Chilling on Forgings.

A paper on the effect of chilling on the impact resistance of forgings has lately been published in the "Proceedings" of the Institution of Civil Engineers by Thomas Andrews, who employed forgings made at the Wortley Iron Works from the best fagoted scrap iron. They were 4½ feet long and 4½ inches in diameter, placed on supports 3½ feet apart. The testing was done by impact, dropping a ton weight 2½ feet.

The experiments of the first set indicate for the forgings cooled slowly from 100° to 0° F. an endurance of a total average mean force of concussion of 1545.42 tons, and a total average deflection of 18.83 inches previous to fracture; and for the forgings chilled suddenly from 100° to 0° an endurance of a mean force of concussion of 999.04 tons, and a total average deflection of 12.07 inches. These results, which are the average of a large number of experiments in each case, represent a considerable reduction of resistance to impact due to the influence of a single sudden lowering of the temperature through 100° F.

The observations of a second set show that the forgings cooled slowly from 212° to 0° F. endured a total mean force of concussion of 1583.11 tons, with a total deflection of 25.83 inches, but the forgings chilled suddenly from 212° to 0° F. endured only a total mean force of 1101.14 tons, with a total deflection of 14.82 inches. The reduction of the resistance to impact from the effect of one sudden chill of 212° F. was therefore about 30 per cent.

The extent of the first and only chill in a third set was considerable—viz., 540° F.—and the effects on the resistance of the forgings to impact were pronounced. An average of 17 experiments gave an endurance of a total mean force from repeated concussion of only 261.93 tons and a total deflection of 7.91 inches, these results indicating a reduced resistance to impact of 76 per cent. compared with the observations on a sudden chill of 212° F., as in the second set.

In the experiments of the fourth set the instantaneous chill was still greater, being represented by a sudden reduction of temperature through about 1112° F. (618° C.) —that is to say, from a red heat to 0° F. (= — 18° C.), and such a great and rapid reduction of temperature alters the molecular structure of the metal and considerably reduces the size of the crystalline formation. The average of 32 experiments showed an endurance of a total mean force of concussion of only 98.73 tons, with a total deflection of 1.50 inches. These results give a reduction of resistance to impact of 91 per cent. compared with the effect of a chill of 212° F.

The results of the experiments of a fifth set, in which the forgings had received a chill from white heat (2786° F. = 1530° C.) to 32° F. (0° C.), indicate an average endurance of a total mean force of 177.92 tons and an average total deflection of 2.57 inches. These results show a rather greater resistance to impact than in the experiments of the fourth set, but yet much less than in the other observations. The author considers the results of the experiments of this set as not so reliable as the others, as the intense chill appeared somewhat to have affected the soundness of several of the internal welds; in all the other experiments the forgings show a perfectly sound clear fracture.

These experiments on wrought iron have further shown that the sudden chilling of iron to a certain extent and subsequent gradual cooling increases the tensile endurance (possibly owing to the reduction of the crystalline structure observed by Chernoff, as a result of chilling), but at the same time considerably reduces both the elongation and contraction of area at fracture.

The effect of impact after the sudden chilling of metals is, however, a different matter, and the experiments have substantially demonstrated that a sudden chill very materially reduces the resistance of metals to impact.

It may be stated that 142 forgings, weighing in all 15 tons 5 hundredweight, and about 60 tons of snow, ice and salt for the freezing mixtures required to produce the low temperatures, were used in the experiments described in this paper.

The Lubec Narrows lighthouse, just completed off the coast of Maine, is one of five to be erected within a year from the present time. The structure consists of a circular foundation pier, supporting a three story circular dwelling, a veranda, to which are attached the boat davits, a circular parapet and an octagonal lantern. The foundation pier is a cast iron cylinder, open at both ends and trumpet shaped at the top, being sunk to the depth of 4 feet in the sand and clay which form the bottom of the bay. The cast iron cylinder is 33 feet in diameter and 30 feet in hight. It is composed of five circular courses, which are bolted together by horizontal flanges, the top section being different in form from those below. Each course is composed of 32 segmental plate castings, which are also bolted together by vertical flanges. The lower portion of the cylinder is filled with concrete to a hight of 19 feet 2 inches, in which are sunk the cisterns to contain the water supply of the house and seven branches of cast iron pipe. The upper portion of the cylinder is lined by a brick wall, forming a hollow space, which is divided in to compartments, forming the engine room, water closet and various rooms for oil, fuel and provisions. The annular space between the brick lining and the circular wall is covered by arches which carry the main gallery floor, which is accessible from the water by ladders, is covered by an iron roof and surrounded by hand rails.

According to the *Revue Industrielle*, some of the waste products resulting from the manufacture of paper furnish excellent material for cheap and efficient lagging for steam pipes. The waste products in question are chiefly those coming from the different cleaning and sorting machines, and which are of a fibrous nature. These, when dry, are to be mixed with potter's earth in the proportion of 4 to 1, enough water being afterward added to form a plastic compound. This is spread by hand over the surfaces to be protected in thin successive layers. When dry, the coating is said to adhere firmly and is not easily broken. Its cost is practically no more than the cost of mixing and applying it.

The Allegheny Bessemer Sale.

Although the correctness of the announcement of *The Iron Age* that the Allegheny Bessemer Steel Company had sold their plant was widely questioned, the sale has taken place. The details have been withheld thus far. In fact, there is some doubt in the steel rail trade whether the purchasers are the Carnegie interest or the Bessemer Steel Association. It does not seem probable that the latter is one of the parties to the transaction, since a number of its members have little direct interest in the removal of the concern as a competitor. Rumor places the prices at a figure which seems favorable to the sellers. The Park interest had for a year acquired the stock holdings of other parties in the plant, and practically controlled the whole of it at the time of the sale.

The plant of the Allegheny Bessemer Steel Company is located at Duquesne, Allegheny County, 13 miles from Pittsburgh, on the Pittsburgh, Virginia and Charleston Railroad. It consists of 2 7-ton converters, 4 iron cupolas, 2 spiegel cupolas, 3 pit furnaces, a 32-inch blooming mill, equipped with a 24 x 48 engine. The rail mill consists of 3 trains of continuous rolls, 2 three-high and 1 two-high. In the engine room there are 16 boilers, 3 blast engines, having a 31 inch steam cylinder, 46-inch blowing cylinder and 48-inch stroke, and 5 press pumps, each 7½ x 24 x 20. In the boiler house there are 16 boilers, 3 fans, 14 x 20, and 4 engines. The annual capacity of the works is 200,000 tons of rails, the plant having produced, when running full, one month within about 150 tons of 17,000 gross tons. The directors are John S. Slagle, president; John W. Doubleday, secretary; William G. Park, Robert B. Brown, Edward L. Clark, George Bolton and David E. Park.

OBITUARY.

WILLIAM P. BRUSH, aged 41, died in this city 5th inst. He had been ill only a few days with typhoid fever. He was born in Greenwich, Conn., where he lived for the most of his life. He was a mechanical engineer of great skill, and left uncompleted several valuable mechanical appliances.

JAMES GREGORY, a well-known brass and copper founder and finisher of this city, died in this city 6th inst. from Bright's disease. He was a native of Connecticut, and was 60 years old. Before he had reached his twentieth year he assisted his grandfather, William Buckley, founder of the brass and copper house which has now existed for 85 years. On the death of Mr. Buckley he assumed full control of the business, which under his name has enjoyed unbroken prosperity, and is now one of the oldest of its kind in the State.

ROBERT NELSON GERE, a prominent citizen of Syracuse, N. Y., died 7th inst. at that place. He was born at Florida, N.Y., in 1822, and served in the Assembly in 1862. He was largely interested in the manufacture of salt and iron, and for 20 years was president of the Merchant's National Bank.

WILLIAM MCILVAIN, the senior member of the well-known firm of Wm. McIlvain & Sons, manufacturers of boiler plate, at Reading, Pa., died in the eighty-fourth year of his age, at Reading, on the 9th inst.

TRADE REPORT.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, November 12, 1890.

The developments of the past week have not been of a favorable character for those who were looking for higher prices. The political upheaval and the financial stringency have pretty thoroughly checked any tendency toward an advance. Unless some remarkable change takes place better figures are out of the question. On the other hand, the situation is by no means gloomy. Prices have not given way on many commodities. Bargains are not yet to be had in any line. If the financial storm is weathered and money soon becomes easier prices will be maintained pretty close to current quotations. Consumers' necessities compel constant buying, and the consumption of Iron and Steel keeps right on at its high rate.

Pig Iron —Transactions have not been up to the level of those of the previous week, but there has been a steady demand for small lots of all kinds of Iron. Inquiries are being received from heavy purchasers, but very few of them want additional stock immediately. The impression prevails that heavy buying will be deferred until well up toward the close of the year. The disposition to speculate in Iron noted in the past two reports has disappeared except with regard to Lake Superior Charcoal, which would be taken if it could be had below present market rates. Southern Warrants are being offered here at the rate of $10 at furnace for Gray Forge; $10.50 for No. 3, and $11.25 for No. 2, and $11 75 for No. 1, with $4 additional freight charges to Chicago. The warrant system is not understood here and so far no sales are known to have been made. Southern Iron from first hands is quite firm at old quotations. Northern Iron is not quotably lower, but concessions have been made without direct reductions. Makers insist that at present cost of Ore and Coke they cannot make lower prices on straight grades. We make the following quotations, cash, f.o.b. Chicago:

Lake Superior Charcoal	$19.00 @ $19.50
Local Coke Foundry, No. 1	17.00 @ .. ..
Local Coke Foundry, No. 2	16.00 @ .....
Local Coke Foundry, No. 3	15.00 @ 15.25
American Scotch	18.'0 @ 19.00
Southern Coke, No. 1	16.25 @ .....
Southern Coke, No. 2	15.75 @ ....
Southern Coke, No. 3	15.00 @ ....
Southern, No. 1, Soft	15.75 @ .....
Southern, No. 2, Soft	14.75 @ . ...
Southern Gray Forge	14.75 @ .....
Southern Mottled	14.25 @ ....
Tennessee Charcoal, No. 1	18.50 @ .....
Alabama Car Wheel	22.25 @ 23.50

Bar Iron.—Prices are lower, and the manufacturers are getting more anxious for orders. At the same time their customers complain that orders already booked are not being delivered with anything like satisfactory promptness. Considerable disparity prevails in quotations. Some makers insist that 1.85¢, Chicago, can be readily obtained, while others regard 1.80¢ as the top of the market. A sale of 1000 tons Car Iron is reported at 1.75¢, flat, Chicago, and jobbers' specifications have been taken at 1.77½¢, with half extras. Inquiries for mill lots are very light at present. Stores ask 2.05¢ @ 2.10¢, full extras.

Structural Iron. — The market is unchanged, the demand running to small lots. Quotations, f.o b. Chicago, in carload lots, are as follows: Angles, 2.35¢ @ 2.40¢; Tees, 2.90¢ @ 3¢; Beams, 3.20¢; Universal Plates, 2.45¢ @ 2.50¢; Sheared Plates, Iron, 2.50¢ @ 2.60¢; Steel, 2.60¢ @ 2.70¢; Beams sell from store in small lots at 3.70¢, but Angles and Tees at 10¢ @ 15¢ ₱ 100 above carload prices.

Plates, &c.—Dealers report fair business in small lots, with a great deal of new work in sight which will consume large quantities of material. The firmness of the mills holds up prices here. An excellent specification recently submitted to 25 prominent mills failed to draw out any concessions in price, which is a remarkable evidence of strength.

Sheet Iron.—Black Sheets are unchanged, but stocks here are quite light. We quote No. 27 Common at 3¢ at mill and 3.30¢ @ 3.40¢ from store. Galvanized holds its own well, with a steady demand. Juniata is 60 and 5 % for small lots.

Merchant Steel.—Steel agents and dealers report a fair trade in progress, with an exceptional demand for high grade stock. Agricultural works are still buying. One of them placed a good order last week.

Old Rails and Wheels.—Iron Rails are on the down grade, a sale of 1000 tons made at $25.50. Consumers are still well supplied. Old Steel Rails are dull at $16.50 @ $20.50, according to length. Car Wheels are quiet, with sales of small lots at $19.

Rail Fastenings.—Splice Bars are dull, with 2.05¢ asked for Iron and 2.25¢ for Steel. Spikes are firm at $2.30 @ $2.35, and Bolts with Hexagon Nuts are unchanged at 3.10¢.

Scrap.—Very little buying is reported of either Wrought or Cast, while Steel is completely dead. Dealers' selling prices, net ton, as follows: No. 1 Railroad, $20.50; No. 1 Forge, $20; No. 1 Mill, $15; Fish Plates, $22.50; Axles, $25; Pipes and Flues, $14.50; Machinery Cast, $13.50 Cast Borings, $8.50; Wrought Turnings, $12.50; Mixed Steel, $12; Coil Steel, $16; Leaf Steel, $17; Old Tires, $19.

Metals.—Lead has been quiet, with nominal quotations at 5.15¢, spot, and 5¢ futures. Lake Copper in carloads is held at 17.25¢, Casting brands, 14.50¢ for carloads, and 14.75¢ for small lots. This price has been made by the refiners as a body, and large transactions have taken place at the advance. Spelter continues firm, but unchanged in price.

Cleveland.

CLEVELAND, November 10, 1890.

Iron Ore.—The talk among Ore dealers is all in the line of lower prices for 1891. It seems to be the universal opinion that next season's market will not open earlier than March or April of next year, and that first prices will be from 50¢ to $1 ₱ ton below those prevailing at the opening of the market for 1890, 13 months ago. There are indications that the shipping season is drawing to a close, although probably 35,000 tons have been unloaded at the Cleveland harbor during the past six days. It is to-day reported that several vessels have been delayed at Escanaba, an event full of significance. There is still considerable Ore to be forwarded from that port, but when cargoes cannot be promptly obtained the end is not far off. There have been a few sales of Ore during the past week at prices slightly in advance of early quotations, and for the reason, chiefly, that only small quantities were taken and the Ore very much desired to fill out stocks. Present estimates of the season's shipments by lake vary from 7,750,000 to 7,850,000 tons.

Pig Iron.—The election over, both buyers and sellers would seem to have more time to devote to the market. There is apparently, however, no increase in business, although stocks are very low and the consumption is enormous. It is said that there have been no additional concessions in prices in order to effect sales, and that if any changes in market quotations were to occur to-day they would be in the nature of advances. In a few instances dealers are said to have declined orders for delivery in January and February of next year. Additional sales of Bessemer at $16.80 are reported and Forge Irons have been let go at $14 @ $14.30, and No. 2 Foundry at $15. The reported demand for Ohio Silveries has not exhausted itself.

Scrap.—No changes in quotations are reported, and only a moderate amount of business is being done. No. 1 Wrought at $21 @ $21.50 and Wrought Turnings at $13 are probably in the best demand.

Coke.—There are complaints of a lack of cars to properly supply the furnaces.

Manufactured Iron.—There is still an excellent demand for Common Bar at 1.80¢ and for Muck Bar at $30.50. Sheets are scarce and valuable.

Nails.—Prices are again slightly reduced, Steel Wire Nails going at $2.50 and Steel Cut Nails at $1.85. The market is only moderately active.

Old Rails.—Prices are still exorbitantly high, sales being reported at $27 @ $27.50. Sellers have little to offer.

Louisville.

LOUISVILLE, KY., November 10, 1890.

There is a fair demand, but only for deliveries during six months of next year, purchases for prompt shipment being rare. Price is basis $10.50 Gray Forge, Birmingham. There have been some slight concessions of this price, but were by a furnace desiring to introduce its Iron. Its whole tonnage, however, is only about 40 to 50 tons per day, so that its offerings cut no figure. The volume of business continues heavy; there are, however, indications of a "letting up" among rolling mills and car companies, but sufficient work is in sight to justify expectations of great activity among manufacturing establishments extending into next year. But whether there is enough new business to keep up the tremendous consumption and take the Iron which is now being offered is a debateable one.

Southern Coke, No. 1 Foundry	$14.75 @ $15.25
Southern Coke, No. 2 Foundry	14.25 @ 14.75
Southern Coke, No. 3 Foundry	13.75 @ 14.25
Southern Coke, Gray Forge	13.25 @ 13.75
Southern Coke, Silver Gray	14.00 @ 15.00
Southern Charcoal, No. 1 Foundry	17.50 @ 18.50
Southern Car Wheel	22.50 @ 23.50

Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date November 10, 1890, write as follows: It is quite impossible to note any change in Pig Iron affairs here during the past week. The market remains uneven, but there were perhaps not so many transactions to show this condition of affairs as decidedly as was shown in our last report. For small lots there have been a number of orders taken where delivery was demanded promptly, this being a condition of the sale. No large transactions for Southern Iron were closed, however. The bookings of Lake Superior Charcoal were not large, and were also generally for prompt delivery. The market is very uncertain, with the sentiment that higher prices will rule in the very near future. We repeat quotations of a week ago:

Lake Superior Charcoal, all numbers	$20.00 @ $20.50
Lake Superior Coke, Bessemer	18.50 @ 18.75
Katahdin (Maine Charcoal)	23.50 @ 24.00
Lake Superior Coke Foundry, all ore	18.50 @ 19.50
Ohio Blackband (40 per cent.)	18.25 @ 18.75
Southern No. 1	16.50 @ 17.00
Southern Gray Forge	14.50 @ 15.00
Jackson County (Ohio) Silvery	19.00 @ 19.50
Connellsville Coke	4.80 @ .....

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., November 11, 1890.

It is a difficult matter to define the exact position of the Iron market to-day, although for the time being prices are practically about as they were a week ago. New business is at a standstill, however, and there is a good deal of uncertainty as to the immediate outcome of events. The flurry on the money market is beginning to be felt in business circles, and, while many close observers express the opinion that legitimate business is in a perfectly sound condition, there is, nevertheless, a degree of hesitancy which is not very assuring. There can be no serious shrinkage in prices, but there may be a curtailment in the volume of business. Prices are already within a very small fraction of the lowest on record, so that there can be no such "slumping off" as there has been in the stock market. Fifty cents to $1 ₱ ton reduction in the selling price of Pig Iron would soon cause quite a number of furnaces to blow out, and as the output so far has not been more than in fair proportion to consumption, it is clear that no important reduction in prices is probable. But so long as the money market is in its present unsettled condition, it is equally improbable that Iron can improve. For the present, therefore, a dull and hesitating market is all that can reasonably be expected. There are some features which under ordinary conditions would be regarded as strongly favorable to a better market. But it may be a little premature to do more than intimate that there are certain projects afoot which if carried out (as seems probable) will doubtless have a very beneficent effect, especially in the Steel trade. Beyond these general remarks there is but little to be said under the various headings, further than to give quotations, which are all more or less nominal, as buyers are inclined to wait developments before entering into important engagements.

Pig Iron.—The market is dull, but so far as known prices have been pretty well maintained. Furnace companies are so well sold up that they have no immediate need for new business, so that unless they can get their price, or very near to it, they are not much inclined to force matters. At the same time, there are plenty of sellers, and offers for round lots would stand a pretty good chance of acceptance on terms more favorable to the buyer than for some days past. Ordinarily quotations for lots delivered in buyers' yards are about as follows:

Ohio Softeners, No. 1x	$19.00	@	$19.50
Ohio Softeners, No. 2x		@	18.50
Standard Penna, No. 1x	18.00	@	18.50
Standard Penna, No. 2x	17.00	@	17.50
Medium Penna. No. 1x	17.50	@	18.00
Medium Penna, No. 2x	16.50	@	16.75
Virginia and Southern, No. 1x	17.00	@	17.50
Virginia and Southern, No. 2x	15.75	@	16.25
Standard Neutral All Ore Forge	15.00	@	15.50
Ordinary Forge Cinder mixed	14.00	@	14.75
Charcoal Car Wheel Iron	22.00	@	26 00

Bessemer Pig.—Market very quiet, with no indications of any immediate revival of interest, either among buyers or sellers. Prices are nominally from $18 to $18.50, at furnace, but the market is in a very sensitive condition and liable to move either way if there is any pressure to either buy or sell.

Spiegel and Ferromanganese.—There is very little demand, and although $31 @ $31.50 is quoted for 20 %, duty paid, buyers are not in the market at much over $30 @ $30.50. Ferromanganese sells in small lots at $68 @ $69, duty paid, for 80 %.

Steel Rails.—The market is very dull, and indeed it could hardly be otherwise so long as the money market remains in its present unsettled condition. There are several large orders in the market, but manufacturers are not inclined to do business unless for cash or first-class security, neither of which is abundant at the moment. The anticipations in regard to a closer working arrangement between some of the companies have not developed as favorably as was expected, so that the entire business is in a dull and hesitating condition, with prices nominally at about $29 @ 30, at mills, according to quantity, delivery, terms of payment, &c.

Steel Billets.—The market is fairly steady, although prices show considerable disparity, some quoting $29.25 @ $29.50 for Nail Slabs, delivered in consumers' yards, without finding buyers, while 4 x 4 Billets have been sold in 1000 ton lots at $30 @ $30.50. On the whole the market looks a trifle better, but its course in the immediate future depends to some extent on the money market. Easier money would be likely to help prices materially.

Muck Bars.—Prices are too high to permit of much business being done. There are sellers at $30 @ $30.25, delivered, and while there is some inquiry, buyers consider $29.50 or thereabouts as full value under present conditions. The result is no sales and prices nominal as above quoted.

Bar Iron.—Market not as active as it has been, although for the present mills have plenty of work. Sellers quote 1.75¢ @ 1.80¢ at mills in the interior, and 1.85¢ @ 1.90¢ at city mills, but on large orders these figures would probably have to be shaded a trifle. The demand is not urgent, however, and firm offers for good sized lots are difficult to secure even at the inside rates above named. Specifications are not coming in as promptly as desired, so that some mills are open for orders, while at the same time they have plenty on their books.

Skelp Iron.—A fair amount of business has been done during the week, but at somewhat lower figures, last sale reported having been at 2¢, delivered, for Grooved Skelp. Consumers are talking 1.95¢ for Grooved, and 2.10¢ @ 2.15¢ for Sheared, but mills are pretty full of orders and are disposed to hesitate rather than make further concessions.

Plates.—Mills are tolerably full of orders, but for some weeks past have been gradually working them down. The consequence is that new business is rather more sought after, and on the right kind of an order prices would be shaded a fraction sooner than risk its going elsewhere. No quotable change can be made at present, and for lots delivered in consumers' yards asking prices are about as follows:

	Iron.	Steel.
Ship Plates	2.25 @ 2.30¢	2.40 @ 2.50¢
Tank	2.25 @ 2.30¢	2.40 @ 2.50¢
Bridge Plate	2.30 @ 2.40¢	2.50 @ 2.60¢
Shell	2.45 @ 2.55¢	2.65 @ 2.75¢
Flange	3.10 @ 3.20¢	2.90 @ 3.00¢
Fire-Box	3.75¢	3.75 @ 4.25¢

Structural Material. — Business is quieter than for some time past, but mills have plenty of work on their books if they could get specifications for it. Meanwhile prices are steady and unchanged as follows for lots delivered in consumers' yards: Angles, 2.20¢ @ 2.30¢; Sheared Plates, 2.30¢ @ 2.40¢, and from 10¢ to 20¢ more for Steel, according to requirements. Tees, 2.7¢ @ 2.8¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—There is some falling off in demand, but mills have been so far behind with their orders that they are glad of a chance to catch up. Prices are a little easier, but not quotably lower, carload lots of best makes being quoted as follows:

Best Refined, Nos. 14 to 20	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24	3.20¢ @ 3.30¢
Best Refined, Nos. 25 to 26	3.40¢ @ 3.50¢
Best Refined, No. 27	3.50¢ @ 3.60¢
Best Refined, No. 28	3.60¢ @ 3.70¢
Common, ¼¢ less than the above.	
Best Soft Steel, Nos. 14 to 20	3¼¢ @ 3½¢
Best Soft Steel, Nos. 21 to 24	3⅜¢ @ 3⅝¢
Best Soft Steel, Nos. 25 to 26	3⅝¢ @ 3⅞¢
Best Soft Steel, Nos. 27 to 28	@ 4⅛¢
Best Bloom Sheets, 1-10¢ extra over the above prices.	
Best Bloom, Galvanized, discount	@ 60 %
Common, discount	62½ @ 65 %

Old Rails.—Prices are a shade easier, and while the supply is exceedingly limited the demand is even more so. Holders ask $25.50 at seaboard and $26 @ $26.50 delivered at points near by, but bids are not within 50¢ @ 75¢ of these figures.

Scrap Iron.—The supply of good Scrap is still small, and consumers have to pay last week's full prices to secure desirable qualities. Sales at about the following figures: No. 1 Railroad Scrap, $23 @ $23.50, Philadelphia, or for deliveries at mills in the interior $23.50 @ $24.50, according to quality and point for delivery; $15 @ $16 for No. 2 Light; $16 @ $17 for best Machinery Scrap, $15 @ $15.50 for ordinary, $15.50 @ $16.50 for Wrought Turnings, $11 @ $11.50 for Cast Borings, and nominally $26 @ $28 for Old Fish Plates, and $17 @ $18 for Old Car Wheels.

Wrought Iron Pipe.—There seems to be no change in the situation The mills are full of work and the jobbing trade are having a steady and heavy demand. Discounts unchanged, as follows: Butt-Welded Black, 47½ %; Butt-Welded Galvanized, 40 %; Lap-Welded Black, 60 %; Lap-Welded Galvanized, 47½ %; Boiler Tubes, 1¾ inches and smaller, 45 %; 2 inches and larger, 50 %; Oil Well Casings, 50 %.

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, November 10, 1890.

Pig Iron.—There is no special change to note in the conditions governing this department. Consumers are apparently satisfied to take their chances on the market advancing and are only buying such quantities to enable them to run through the balance of the year, and do not appear anxious to anticipate their wants beyond that time. Consumers are all busy, and in some cases are so rushed with work that they are unable to take all the business that is offered them. The outlook is considered favorable for a continuance of this activity through the winter months. Prices are moderately steady, and as a rule those quoted below are generally adhered to. There are some sales made, however, from 25¢ to 35¢ below these prices, which is due to the fact that the furnace is either in need of money or the brand of Iron offered is new and comparatively unknown in this market. Such sales, while they are legitimate in every sense of the word, have a demoralizing tendency on the market, and it seems unjust that prices are controlled to a certain extent by such transactions as these. Such is the case, however, and until sufficient of these Irons have been sold it seems out of the question to look for a very steady adherence to prices as quoted below Sales during the week under review have been of a hand to mouth character, and as a rule the prices quoted herewith are the basis on which most of these sales were made. We quote as follows for cash, f. o. b. St. Louis:

Southern Coke, No. 1 Foundry,	$15.50	@	$16.00
Southern Coke, No. 2 Foundry,	14.50	@	15.00
Southern Coke, No. 3 Foundry,	14.00	@	14.50
Gray Forge	13.50	@	14.00
Southern Charcoal, No. 1 Foundry	17.25	@	17.75
Southern Charcoal, No. 2 Foundry	16.75	@	17 25
Missouri Charcoal, No. 1 Foundry	15.75	@	16.25
Missouri Charcoal, No. 2 Foundry	15.25	@	15.75
Ohio Softeners	17.75	@	19.25

Bar Iron.—There is some falling off in the demand, but as the mills are pretty well supplied with orders for future delivery prices have not been affected. The future is filled with some degree of uncertainty, and mills are preparing to meet the situation as best they can. We quote as follows: Lots from mill command from 1.85¢ to 1.90¢, small lots from store are quoted at from 2.05¢ to 2.10¢.

Barb Wire.—Mills report a fairly satisfactory trade for the season, and in some cases are quite busy. Prices have reached a point, however, that will induce buying, as it seems highly improbable that the present low prices will be further reduced. Acting on this principle, many dealers are increasing their orders. This is especially true of the Southern trade, and the chances are that Wire bought to-day will prove a good investment a month or two hence. We quote as follows, f.o.b. cars St. Louis, 60 days: Painted, 2 80¢; Galvanized, 60¢ additional; carload lots 5¢ per cwt. less than above prices.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, } PITTSBURGH, November 11, 1890. }

The question of natural gas for fuel continues to be a very important one for our manufacturers, especially those engaged in Iron and Steel, and opinions differ very much in regard to the outcome of the same. The action of the gas companies is not so much that they are short of gas as that they can make more money out of private consumers than in supplying large manufactories, and they have not enough for all. The Philadelphia Company have 26,000 private consumers in Pittsburgh, and it is out of these the company make the most money.

Pig Iron.—The market continues in much the same condition as noted a week ago, with the exception possibly that there is a stronger feeling on the part of furnacemen. Some furnacemen aver that rather than cut below rates now ruling they will "blow out" or "pile up." Forge Iron has steadied up at $15, cash, for well known favorite brands; outside Irons, not so good or well known, are to be had for less. In regard to Bessemer reports are conflicting; $17, cash, appears to be regarded as the ruling price, but it is said that there are sellers in the valleys at $16, equal to $16.85, delivered in Pittsburgh. One of our city furnaces is reported as having bought some Bessemer to put in on contracts. There has been a strong movement in progress here for some time past to "bear" the market for Bessemer, and to an extent it has been a success, but the indications at present are that prices cannot be forced much, if any, lower, because they do not now more than cover actual cost of production. A city furnace is asking $18, cash, and refusing to sell for less, but, as a matter of course, it is not making any sales, and we mention it only to show the idea of some of our furnacemen. There are a number of buyers for Bessemer, and it is possible some large sales will be made before long. Buyers are apprehensive lest the market might go lower, hence they are holding back; and, on the other hand, they are afraid to wait much longer, as there is a possibility of it taking a turn in the opposite direction. We quote prices as follows:

Neutral Gray Forge	$14.75 @	$15.00,	cash.
All Ore Mill	15.50 @	16.00,	"
White and Mottled	14.25 @	14.50,	"
No. 1 Foundry	17.00 @	17.25,	"
No. 2 Foundry	16.00 @	16.25,	"
No. 3 Foundry	15.50 @	15.75,	"
No. 2 Charcoal Foundry	21.00 @	22.00,	"
Cold Blast Charcoal	27.00 @	30.00,	"
Bessemer Iron	16.75 @	17.00,	"

Muck Bar.—The market is weaker under the influence of increased offerings and a falling off in demand. Small sales on immediate or near-by delivery at $31.25 @ $31.50, cash, but deliveries during the first quarter of 1891 are offering freely at $31 without finding buyers. Production in this immediate vicinity will be considerably increased as soon as a number of mills have changed their puddling furnaces so that coal can be used in them, and these mills, instead of being buyers, as has been the case for come time past, will be able to make all they require.

Manganese—Continues dull; small sales of 80 % domestic at $70 @ $71 ℔ ton for immediate or near-by delivery.

Manufactured Iron.—There is not so much business, but the mills have all they can do working up old contracts. There has been no recent change in prices: Bars, 1.80¢ @ 1.90¢; Plate and Tank, 2.20¢ @ 2.25¢; No. 24 Sheet, 2.85¢ @ 2.90¢; Grooved Skelp, 1.85¢ @ 1.90¢; Sheared do., 2.20¢ @ 2.25¢, all 60 days, 2 % off for cash. Never before has there been such a demand for Skelp Iron, and the mills making a specialty of the same have been crowded up to their utmost capacity for several months, and this is likely to be the case until the close of the present year.

Nails.—The Cut Nail trade continues in an unsettled and unsatisfactory condition, and the prospect for any immediate improvement is not encouraging. As it now stands, Steel can be sold below the price of Iron Cut Nails, as Steel Plate is much cheaper than Iron. Steel Nail Slabs at the present time are firm at $3 @ $4 ℔ ton below the price of Iron Muck Bar. We quote Nails at $1.85, 60 days, 2 % off for cash, in car lots. For a large order of desirable specifications the price above quoted would probably be cut 2½¢ to 5¢ ℔ keg. There is no change to report in the general position of the Wire Nail market; manufacturers continue to report a very good demand; also that prices are maintained at $2.25, 60 days, 2 % off for cash.

Structural Iron.—A continued good demand is reported and prices are unchanged, as follows: Angles, 2.30¢; Beams and Channels, 3.10¢; Tees, 2.85¢; Steel Bridge Plates, 2.65¢ @ 2.70¢; Universal Iron Mill Plates, 2.30¢; Refined Bars, 1.90¢ @ 2¢. It is rumored that Carnegie, Phipps & Co. will start their recent acquisition, the Allegheny Bessemer Steel Works, up on Structural Steel as soon as what Rail orders are booked have been worked up.

Steel Plates.—The mills here are still reported as having all they can do. Prices remain unchanged: Fire Box, 4.25¢ @ 4.75¢; Flange, 3.10¢; Shell, 2.90¢; Tank, 2.50¢.

Merchant Steel.—Manufacturers continue to report very fair business. Prices remain unchanged: Tool Steel, 8¢ and upward, as to brand and quality; Crucible Spring Steel, 4¢; Crucible Machinery Steel, 5¢; Open Hearth Steel, base sizes, 2½¢ @ 3¢; Bessemer Machinery Steel, 2.40¢ rates; Tire Steel, 2.55¢ ℔ lb rates.

Wire Rods—Continue weak. We now quote at $39 @ $40, cash.

Wrought Iron Pipe.—There has been no change in the situation during the past week; mills are all as busy as they can be, and the probability is that this will continue until the close of the year. Of course there are not so many new orders, but mills are unable to catch up with contracts made some time ago. Prices remain unchanged. Discounts on Black Butt Weld, 47½ %; on Galvanized do., 40 %; Black Lap Weld, 60 %; on Galvanized do., 47½ %; Boiler Tubes, 1¾-inch and smaller, 45 %; 2-inch and larger, 50 %; Casing, all sizes, 50 %.

Billets and Slabs.—There is considerable inquiry, but buyers are holding back, so that in the event of lower prices they will be in position to take advantage of the same. Billets may be quoted at $27 @ $27.50, although it is rumored that sales have been made as low as $26.75. It is claimed that they should not be sold under $28, and that it costs about that to make them, taking Bessemer Iron at $17 and allowing $11 for converting. A sale of 7000 tons made some weeks ago at $27.75, delivered at buyer's mill, has just been made public. The Allegheny Bessemer Company are credited with having sold all the way from 25,000 to 50,000 tons of Billets of late, owing to a scarcity of Rail orders.

Old Rails.—There has been rather more inquiry the past week for Old Iron Rails, and the market is firmer; sales reported at $28 @ $28.50. The inquiry comes almost wholly from Valley consumers. Two of the largest consumers here, Dilworth, Porter & Co. and the Pittsburgh Forge and Iron Company, have abandoned the use of the same for the present; the former firm, as announced in *The Iron Age* of last week, will use Soft Steel for making Spikes. Old Steel Rails continue very dull, and for remelting, in the absence of sales, may be quoted at $18.50 @ $19. However, there will no doubt be an improvement in the demand before long.

Railway Track Supplies.—There is a fair busines but no change in prices. Spikes, $2.20, 30 days, f.o.b. at works; Iron Splice Bars, $1.95 @ $2.05; Steel Splice Bars, $2 @ $2.10; Track Bolts, $2.90 with Square and $3 with Hexagon Nuts.

Steel Rails.—There has been no important change in the situation; but little new business reported recently, although there is considerable inquiry. It is rumored that in the event of the works of the Allegheny Bessemer passing into the hands of Carnegie & Co. the rail business of the firm will be transferred to the Edgar Thomson Works, and the Allegheny Bessemer Works put to work on Structural and other shapes of Steel.

Old Material.—There is some inquiry for No. 1 Railroad Wrought Scrap, chiefly from the Mahoning Valley, with sales reported at $22.50 @ $23, net ton. Old Car Wheels nominal at $18 @ $18.50, gross ton. Sales of No. 1 Cast Scrap at $15.50 @ $16; Steel Bloom and Rail Ends, dull and nominal, $19 @ $20.

Coke.—Cars are in better supply for local shipments, but for shipment to a distance either East or West transportation is still hard to obtain. Prices remain unchanged. Furnace Coke, $2.15 ℔ ton on cars at ovens; Foundry Coke, $2.45, and Crushed, $2.65.

(*By Telegraph.*)

There has been no change in the general situation since yesterday. Muck bar is weak, while No. 1 Forge Irons are more inquired for and firmer. Reports in regard to Bessemer Iron continue conflicting, and bears are determined to hammer it still lower, if possible. Old Iron Rails in better demand. Sales, 1500 tons at $28.50, to be delivered to consumer in Mahoning Valley.

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., } CHATTANOOGA, November 12, 1890. }

(*By Telegraph.*)

The market appears to be quite steady, although rumor states that some concessions are being made by furnaces whose Irons are not well known.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, November 11, 1890.

There is nothing encouraging to relate concerning the present condition of the market for pig iron, and the prospect for the future is darkened by the clouds on the financial horizon. The volume of business in pig metal since the first of the month has been small, and for several days during the past week the market has been absolutely dull and flat. Prices have not changed essentially, but where large sales have been made low figures have ruled. The deliveries of Iron upon old contracts have continued extremely easy, reflecting a relief to the car famine which prevailed so long in the South. It is reported that besides the Tennessee Company other Southern companies have temporarily retired from the market, but such action has little influence upon the general market, which is subject to causes beyond the immediate control of the producers of Iron. The condition of the money markets of the world, among which an intimate relation exists, is now the all important factor in the business community, entirely superseding the political excitement which dominated and embarrassed trade for a few days. Among the most important sales of Iron made during the past few days are the following: 1700 tons Northern No. 2 Foundry; 400 tons do. No. 1 Foundry; 700 tons Southern No. 2 Foundry; 875 tons Northern No. 1 Foundry; 300 tons Southern No. 1 Foundry; 500 tons Southern No. 2 Soft; 500 tons Southern Mottled; 1500 and 2000 tons Southern Gray Forge and 500 tons No. 2 Southern Charcoal Iron, all on cash basis at furnace, mainly at inside quotations. The industrial situation is unchanged in every important particular, and the consumption of Iron undiminished. The orders placed for Iron show a general distribution among various brands and kinds, showing the tendency to buy only for present needs, awaiting a settlement of the present disturbing elements before placing large contracts. The easy tone prevailing, too, encourages buyers to hold off. Prices generally are without quotable change, and are for cash, f.o.b. Cincinnati, as follows:

Foundry.	
Southern Coke, No. 1	$15.25 @ $15.75
Southern Coke, No. 2	14 25 @ 14.50
Southern Coke, No. 3	13.75 @ 14.00
Ohio Soft Stone Coal, No. 1	17.00 @ 17.50
Ohio Soft Stone Coal, No. 2	16.00 @ 16.50
Mahoning and Shenango Valley	17.50 @ 18.00
Hanging Rock Charcoal, No. 1	21.00 @ 22.00
Hanging Rock Charcoal, No. 2	19.50 @ 20.50
Tennessee and Alabama Charcoal, No. 1	18.00 @ 19.00
Tennessee and Alabama Charcoal, No. 2	18.50 @ 19.50
Forge.	
Gray Forge	13.25 @ 13.50
Mottled Neutral Coke	12.75 @ 13.00
Car Wheel and Malleable Irons.	
Southern Car Wheel	22.50 @ 23.50
Hanging Rock, Cold Blast	24.00 @ 24.50
Lake Superior Car Wheel and Malleable	21.00 @ 22.00

FINANCIAL.

Excitement in Wall street, only paralleled by "Black Friday," for the moment overshadows the business horizon. The attendant phenomena are a shrinkage of securities, demands for a wider margin of collateral, the calling in of loans and occasional failures among leading operators, some of whom occupied positions lately considered almost impregnable. But the disturbance, whatever its name, although wide in its ramifications, is recognized as essentially local in its influence, so far as concerns the sphere of legitimate business. Nevertheless, the temporary absorption of money and consequent high rates for time loans, arising from low bank reserves, is liable to occasion temporary embarrassment, even among the strongest firms. It is well that trade is everywhere on a conservative basis, with limited credits, and that confidence remains unshaken.

The Stock Exchange markets became suddenly depressed on Friday, upon the announcement that the Bank of England at a special meeting had advanced its rate of discount to 6 %, in consequence of a heavy withdrawal of gold to the Continent. Stocks broke sharply in all directions, and large volumes of securities were thrown on the market. On the appearance of the bank statement the selling of long stock was renewed. The panicky feeling continued on Monday, and was strengthed by rumors of serious complications in London. Business was suspended about noon for half an hour, in consequence of the sudden death, on the floor, of F. N. Struthers. On Tuesday the crisis culminated, with the Villards weakest under heavy bear attacks. At one time a rumor was current that the Vanberbilts had sold a block of $10,000,000 4s to the Government, but this was subsequently denied; and another rumor was that Mr. Gould had obtained control of the Union Pacific. Among the failures announced was that of Decker, Howell & Co., a firm identified not only with the Villard stocks, but with the Standard oil interests as well, and which carried the accounts of the biggest stock operating firm in Chicago. Sales of stock under the rule for its account were made in Edison general electrical stock, which forced the price down to 65, a decline of 24½ points for the single day. A large amount of Great Northern preferred, Northern Pacific common and preferred, North American, Manitoba, Western Union, Wisconsin Central and Missouri Pacific was also sold under the rule for this firm. The liabilities of Decker, Howell & Co. were estimated by their assignee at $10,000,000. The firm of Charles M. Whitney & Co., bankers and brokers, also assigned, the latter holding a great deal of Toledo and North Michigan stocks and bonds, Hocking Valley Iron and Coal, Texas Pacific, &c. It was stated that the Whitney National Bank of New Orleans is not affected, nor the Whitney Iron Works, in which Mr. Whitney is interested. After the close of banking hours it was learned that three leading banks had been unable to meet their Clearing House obligations. There was a balance against the Bank of North America of $1,400,000, which it was unable to settle. The other banks were the North River and the Mechanics' and Traders'. The heavy balance was created against the Bank of North America by overdrawal of the account of Decker, Howell & Co. During the day the Mechanics' and Traders' Bank made its settlements with the Clearing House, and the other two banks received assistance from other banks in the association and pulled through. Late in the afternoon the Clearing House decided to appoint a committee of presidents with authority to issue Clearing House Loan Certificates, in order to enable banks to settle balances between themselves. This action restores confidence. The banks having received the *quasi* indorsement of the Clearing House, they will now stand by their customers. It is noted as a coincidence that the panics of 1875 and 1884, as well as the latest, were precipitated by the collapse of Northern Pacific securities. A large silk importing house—that of John T. Walker, Son & Co., went under, in consequence of the stringency in money.

The Government bond market was weak for the 4s, which declined ¼. Quotations as follows:

U. S. 4½s, 1891, registered	103
U. S. 4½s, 1891, coupon	104
U. S. 4s, 1907, registered	123
U. S. 4s, 1907, coupon	123
U. S. currency 6s, 1895	113

On Wednesday there was less excitement, but two more failures occurred on the Exchange. The Villards partly recovered.

The merchandise markets were unfavorably affected by the money situation and by disturbances incident to the elections. The market in both cotton and woolen goods is pronounced in better shape than at this date for many years. In one respect it is reasoned that the election will operate beneficially by restraining competition among manufacturers who, under ordinary circumstances, might embark their capital to a reckless extent in new enterprises. Rumors of more failures among clothiers had no effect on credits, and collections continue good. Wheat broke in sympathy with the decline in silver and shrinkage of stocks in Wall street, there being less confidence in the stability of prices, and spot closed at a decline. Breadstuffs were generally demoralized and lower. The Bureau report shows an average of 19$\frac{5}{10}$ bushels per acre. This is 73 % of last year's yield, and points to a crop of 1,540,000,000 bushels to 1,550,000,000 bushels. The United Kingdom markets have been advised of larger shipments forward of wheat from India and Baltic ports, and few orders have been sent this way. Provisions were depressed by large stocks of hog products, particularly lard, also by dear money. In coffee there is no marked change. Cotton is lower. The Bureau report, it is said by the trade, points to a crop of 8,000,000 to 8,300,000 bales, the largest ever grown. In rubber there is a further decline. Sugars are stagnant pending the trust organization scheme. Sugar certificates advanced on the appointment of three receivers said to be friendly to the trust. Anthracite coal is flat; not a pound sold at October prices.

The bank statement showed a decrease of $3,246,225 in reserve, which wipes out the previous surplus of $826,850 and leaves a deficit of $2,233,345. This change results from a decrease of $3,185,100 in specie, $1,068,900 in legal tenders and $4,031,100 in deposits. The loans are down $936,200. As the banks only lost $900,000 by the Sub-Treasury operations, and sent $533,000 to other points, the statement is more unfavorable than there was reason to expect. The loan market has been feverish and unsettled, the chief influence having been the steady decline in stock prices, which weakened a large number of loans and called for fresh collateral. The average rate for call loans was 6 %, and ranged as high as ½ % and interest. The banks found themselves unable to do much more than supply the needs of the regular customers. Time loans were scarce and rates nominal. Gold is still being shipped to the interior because of the scarcity of small currency.

Exchange was dull and heavy until Friday, when, in consequence of the advance in the Bank of England rate of discount to 6 %, long sterling was reduced to $4.80½, while short was firm at $4.85½ to $4.86.

The foreign commerce of the port of New York was very large during October, the imports having amounted to $51,249,599, exclusive of specie, but this total is not equal to that of July, though it is almost $6,000,000 in excess of the total for the same month last year. Four millions of the increase, as compared with last year, were in the free list, and consisted largely of the goods made free under the new tariff, which took effect on the 6th of the month. A great falling off is looked for during the remainder of the year. The amount paid in for customs in October was $16,000,000. The total import for ten months is $473,582,151, as compared with $421,467,198 for the same time last year. The exports of merchandise in October were $32,059,531, which

is a fraction larger than for the corresponding month of last year and much above the average for the last 15 years. Total for ten months, exclusive of specie, $287,008,750, against $285,742,366 for the corresponding months in 1889

The continuous decline in silver is attributed to increased production at the mines. Another view is given by the *Evening Post*, which says: "Dealers in silver anticipate the passage of a free-coinage bill in the near future, and as a consequence the cessation of purchases by the Government of the United States. Whenever these purchases cease the value of silver will be regulated by the law of supply and demand, as all other things are, gold included. At present the Government gives an artificial value to silver by buying 4,500,000 ounces per month. When free coinage comes this artificial support will cease, and silver will find its own level, whetever that may be." The Treasurer on Monday purchased all the silver that was offered—viz., 1,305,000 ounces—at 1.0220 @ 1.0670, the object being to support the general market.

The declared surplus by the latest statement is $51,415,520, but $22,405,722 of this sum is on deposit in the national banks and $19,586,049 is in fractional silver and minor coin, leaving the net balance available $9,423,749. The Department still keeps open the standing offer of October 9 to redeem 4½ per cent. bonds at par with full interest to September 1. The new $5 silver notes are now being issued, and a considerable number of the tens have been paid out.

Metal Market.

Pig Tin—In this market prices have declined about ¼¢ ℔ lb under the influence of a fall of £3 ℔ ton values for prompt deliveries in London, due chiefly to depression there consequent upon adverse financial conditions. Lower prices have served to stimulate speculative action here in some degree, and also to prompt rather freer purchases for consumption. Still operations have been conducted in a cautious manner for the most part, and outstanding obligations are nowise extensive in this quarter, whatever the situation may be in the London market. Sales of 10-ton lots are recorded at 20.95¢, net cash, for prompt and for December and January deliveries, while 21¢, regular, has been accepted for 5-ton lots. On Wednesday, however, there was a rather stronger feeling, with 21¢ @ 21.05¢, net cash, quoted for round lots, and 21.30¢ @ 21.40¢ for jobbing quantities.

Copper.—Transactions in this metal have been of unimportant character and the situation of the market is precisely the same as it was a week ago. Producers hold to the prices that were then quoted, at all events, and have manifested no greater desire to secure orders. Outside holders, too, have offered with more or less reserve. As for consumers, they have manifested indifferent interest, the larger concerns claiming to have sufficient supply to tide over the balance of the year. The Lake Superior mining companies' price remains at 17¢, but there are yet some lots that may be secured at 16¾¢. Arizona is still quoted at 15 @ 15¼¢, and other descriptions at 14½ @ 14¾¢, with the demand, to all accounts, very fair, but chiefly for moderate quantities.

Pig Lead.—Considerable foreign Lead has arrived latterly. The bulk of it went direct to consumers on purchases made some time ago, and, in connection with receipts from domestic sources of supply, has served to relieve urgent wants in a great degree. There is yet a fairly liberal amount of foreign Lead to come forward, which together with the prospective supply of domestic promises to cover consumers' wants during the balance of the year. The market, therefore, presents a rather weakish appearance. Spot stock may now be had in carload lots at 5.20¢ for prompt delivery and at 5.15¢, or possibly a fraction less, for near future shipment. About the same figures are quoted for foreign.

Spelter—The demand for this metal has been moderate. Orders have come in slowly and rarely for more than single carload lots. Supplies for delivery during the next 60 days are not offered with any urgency, but it is easier to buy at the present time than it was a week ago, and 6.05¢ @ 6.10¢ is apparently full value for prime Western for early shipment.

Antimony.—Outside of ordinary jobbing sales there has been little movement and the market continues rather weak. Hallet's is quoted at 17½¢ and Cookson's at 19½¢ in wholesale quantities.

Tin Plates.—Spot business has been on a very moderate scale, and transactions in futures have been unimportant. The general demand is moderate. Prices have undergone little change, and the market preserves a very good tone, despite the prevailing quietude. The situation in the foreign market is outlined in our special cable reports. Quotations for round lots on the spot are as follows: Coke Tins—Penlan grade, IC, 14 x 20, $5.45; J. B. grade, do., $5.50. Bessemer do., $5.45. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.40 @ $5.45; Siemens Steel, IC basis, $5.50 @ $5.60; IX basis, $6.50. IC Charcoals—Calland grade, IX—; Melyn grade, $6.12½ @ $6.25; for each additional X add $1.50; Allaway grade, $5.87½; Grange grade, $6; for each additional X add $1. Charcoal Ternes—Worcester, 14 x 20, $5.50; 20 x 28, $10.87½; M. F., 14 x 20, $8; do., 20 x 28, $16.50; Dean 14 x 20, $5.15; do., 20 x 28, $10.25 @ $10.37½; D. R. D. grade, 14 x 20, $4.85 @ $4.90; do., 20 x 28, $9.75; Mansel, 14 x 20, $4.95 @ $5; do., 20 x 28, $10; Alyn, 14 x 20, $5.12½; do., 20 x 28, $10; Dyffryn, 14 x 20, $5.75; do., 20 x 28, $10.50; Wasters—S. T. P. grade, 14 x 20, $4.65; do., 20 x 28, $9.50; Abercarne grade, 14 x 20, $4.60; do., 20 x 28, $9.37½.

New York Metal Exchange.

The following sales are reported:

FRIDAY, November 7.

10 tons Tin, December ..... 21.00¢
10 tons Tin, January ..... 21.00¢
10 tons Tin, November ..... 21.00¢

SATURDAY, November 8.

20 tons Tin, February ..... 20.95¢
10 tons Tin, January ..... 20.95¢

MONDAY, November 10.

10 tons Tin, spot ..... 20.95¢
10 tons Tin, cash ..... 20.95¢

TUESDAY, November 11.

10 tons Tin, spot ..... 20.95¢

Imports.

Hardware, Machinery, &c.

Baldwin Bros. & Co., Gun Barrels, cs., 14
Boker, Hermann & Co., Arms, cs., 25
Barbour Bros. & Co., Mach'y, cs., 8
Clark, G. A. & Bro., Mach'y, cs., 2
Curley, J. & Bro., Cutlery, cs., 17
Downing, R. F. & Co., Mach'y, pgs., 5
Erie Dispatch Company, Stoves, 260
Field, Alfred & Co., Mdse., cs., 14; Arms, cs., 10
Folsom, H. & D. Arms Co., Mdse., cs., 5; Arms, cs., 6
Forrest, H. A. & Co., Mach'y, cs., 2
Hartley & Graham, Arms, cs., 13
Hampton, J. W., Jr., & Co., Arms, pgs., 8
Johnson, John & Co., Mach'y, pgs., 15
Lau, J. H. & Co., Arms, cs., 8
Meacham Arms Co., Arms, cs., 18
Mosses & Co., Mach'y, cs., 2
Newcastle Wire Nail Company, Mdse., cs., 3
Schoverling, Daly & Gales, Arms, cs., 28; Mdse., cs., 10
Strutter, Meyer & Co., Mach'y, pcs., 2
Taylor, Thos., Mdse., cs., 2
Thomas, W. W. & Co., Mach'y, cs., 6
Werlemann, H., Arms, cs., 4
Wiebusch & Hilger, Mdse., cs., 14
Wyman, C. H. & Co., Arms, cs., 4

New York.

Office of *The Iron Age*, 66 and 68 Duane street, NEW YORK, November 12, 1890.

American Pig.—The stocks of Iron, notably of the higher numbers, at the furnaces tributary to this market are not high, so that statistically the situation is sound. The danger lies in the probability that some furnace companies North, and particularly South, will be forced from financial necessity to press Iron on the market. Warrants are being offered here under circumstances which indicate inability to carry them any further. We quote $17 @ $18 for No. 1 Foundry, $16 @ $16.50 for No. 2 Foundry and $15 @ $15.50 for Gray Forge, good Northern brands, tidewater delivery. Southern No. 2 may be quoted $15.75 @ $16.25 and No. 3 $14.75 @ $15.25.

Spiegeleisen and Ferromanganese.—The market is lifeless for Spegeleisen, which we quote nominally $30 @ $31. Ferromanganese is selling only in a small way at $67 @ $68.

Steel Billets.—Among the sales lately made we may note a lot of 2000 tons of High Carbon Billets for a Rod mill now building on the Hudson River. An Eastern mill was the seller. The market continues to be governed by the Western works, who can lay down at $29.50 @ $29.75 at Eastern points. Rods are selling in a small way only at $41.50 @ $42 at Eastern sellers' mills.

Steel Rails.—Eastern mills are doing very little business, only a few sales of moderate lots having been made for New England delivery; $29 continues to be the nominal quotation. Bids for the 59,000 ton order of the Union Pacific were to be in by Monday evening. Thus far no report has reached this city as to whether any part of the order has been placed. It is doubtful whether, under the circumstances which have developed during the past few days, anything will be done.

Rail Fastenings.—The market is dull at 1.70¢ @ 1.80¢ for Angles, and $2 @ $2.25 for Spikes, and 2.75¢ @ 3¢ for Bolts.

Manufactured Iron.—It is now generally known that a large Architectural Iron firm in this city has bought a round lot of German Beams, and it is believed that other negotiations are pending. Whether this will force the association to reduce the price of Beams remains to be seen. The mills are still very busy indeed. It appears that somewhat exaggerated ideas prevail as to the increase in the consumption of Beams. It is estimated by good authority at about 100,000 tons for this year, which is only a moderate increase. The demand for Bridge Iron is about 150,000 tons annually. During the last week the contract has been placed for the Weehawken Incline and Elevated, involving about 1500 tons. We quote: Angles, 2.20¢ @ 2.40¢; Tees, 2.65¢ @ 2.75¢, and Plates, 2.2¢ @ 2.3¢. Refined Bars, 1.75¢ @ 1.90¢, delivered.

Warrant Stocks.—The American Pig Iron Storage Warrant Company report as follows:

	Tons.
Stock in yard, October 31	65,300
Put in yard 11 days ending November 11	..
Total	65,300
Withdrawn 11 days ending November 11	100
Net stock in yard, November 11	65,200

Old Rails.—We note sales during the week of 2000 to 3000 tons of Old Rails, spot, for delivery at Western points, the bulk of it for Youngstown. There have also been sold 2000 tons of Old Iron Rails and 2000 tons of Old Steel Rails, to arrive, at private terms. While sellers claim

to be able to do $25 for Iron and $21 for Old Steel, consumers in this immediate vicinity have views far below.

Marshall Lefferts & Co., agents, have removed their down town office to 100 Beekman street.

Coal Market.

The Wilkesbarre Coal trade is dull, with cut rates the rule rather than the exception. The latest schedule is far in advance of actual prices, the best that can be hoped for by operators being to realize the October circular. The situation is substantially as described in these columns on November 30—namely: The companies have been getting for Egg alongside $4.10 @ $4.15; Stove, $4.30; Chestnut, $3.75 @ $3.80. They will now try and get the October circular, viz.: Egg, $4.20; Stove, $4.45; Chestnut, $4.10, and as nearly as can be judged will realize 10¢ @ 15¢ under these figures, except the last named, which may bring $3.80 @ $3.90. The production for the week was 850,304 tons; for the year 29,235,255 tons; last year to date, 29,582,851 tons. Pennsylvania Railroad tonnage, 237,761 tons; total for the year, coal and coke, 14,297,-851 tons, against 12,664,810 tons. Reading tonnage for the week, 175,000 tons. The Soft Coal trade is quiet; production heavy; Clearfield for the week, 50,909 tons; Beach Creek, 66,055 tons.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, November 12, 1890.

Prices for Pig Iron warrants dropped to 51/1 for Scotch, 48/4½ for Cleveland and 58/3 for Hematite, after having shown a strong upward tendency. The decline was due in part to unfounded rumors of relighting of some furnaces and the stringency in the money market. A fear that the Bank rate would be advanced to 6 % on Friday also caused some holders to realize. The greater portion of outstanding warrants are in strong hands and held very firmly in the face of rather adverse surrounding influences. Shipments last month were 100,000 tons, against 142,000 tons in October, 1889.

The spot price for Pig Tin has dropped to £94. 2/6, owing to the financial situation and some increase in stocks. The two influences caused more or less anxiety to sell. The general position is still good, however, and the chief holders are confident of a firmer market. At the close the market was irregular.

In Copper there has been a large business, and prices, after declining somewhat sharply, turned for the better, with £5. 7/ paid for Merchant Bar prompts. The early decline was caused by dearer money and realizations by outsiders. There has also been considerable selling on "bear" account, but the market has received influential support the past few days. Consumers are buying moderately.

There has been a better demand from the States for Tin Plates, with Siemens Cokes receiving the greater attention, chiefly for San Francisco. Sellers' high ideas on values, however, hinder business. Makers are confident of fuller prices and reluctant to arrange contracts. There have been offers from America on the entire output of certain mills for six months, but these were not accepted owing chiefly to uncertainty of labor. The trade are jubilant over the result of the American elections. Shipments last month were 45,000 tons, against 33,000 tons a year ago. The quantity sent to the United States was 36,000 tons, or 11,000 tons more than last year.

The Solway and the Cammell companies are each building another furnace.

Scotch Pig Iron.—There is little doing in Makers' Iron, and prices are nominal in a great measure.

No. 1 Coltness,	f.o.b. Glasgow	.....	..
No. 1 Summerlee,	" "	....	65/6
No. 1 Gartsherrie,	" "	.....	..
No. 1 Langloan,	" "	.....	..
No. 1 Carnbroe,	" "	.....	54/6
No. 1 Shotts,	" at Leith	... .	..
No. 1 Glengarnock,	" Ardrossan.	.....	..
No. 1 Dalmellington,	" "	.....	58/
No. 1 Eglinton,	" "	.....	55/

Steamer freights, Glasgow to New York, 1/, nominal; Liverpool to New York, 10/.

Cleveland Pig.—The demand is moderate and prices have undergone little change. Makers quote 48/6 for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—There is little doing, and prices fluctuate with the movement of warrants. Makers quote West Coast brands, Nos. 1, 2 and 3, at 59/, f.o.b. shipping port.

Spiegeleisen.—Prices are firmly held, and there is yet a very good demand. English 20 % quoted at 102/6, f.o.b. shipping port.

Steel Rails.—Business has been rather slow, and prices are without change. Heavy sections quoted at £5. 2/6 and light sections £6, f.o.b. at N. W. England shipping point.

Steel Blooms.—Demand runs very fair and prices are steady. Makers quote at £4. 17/6 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—There is still a very fair demand and prices remain as before. Bessemer, 2½ x 2½ inches, £5. 2/6, f.o.b. at N. W. England shipping point.

Steel Slabs.—There has been no change in prices or in the character of demand. Bessemer quoted at £5, f.o.b. at N. W. England shipping point.

Old Iron Rails.—Very little doing in this line. Prices are greatly nominal. Tees quoted at £3. 2/6 @ £3. 5/ and Double Heads £3. 5/ @ £3. 10/, f.o.b.

Scrap Iron.—The market remains dull. Heavy Wrought quoted at £2. 6/ @ £2. 7/6, f.o.b.

Crop Ends.—Sales are light and the demand is slow. Bessemer quoted at £3 @ £3. 2/6, f.o.b.

Tin Plate.—The market quiet, with buyers and sellers considerably apart. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	18/9 @ 19/3
IC Bessemer Steel, Coke finish	17/9 @ 18/
IC Siemens " " "	18/ @ 18/3
IC Coke, B. V. grade	17/3 @ 17/6
Charcoal Terne, Dean grade	17/ @ 17/3

Manufactured Iron.—A fair business passing and prices show little movement. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Marked Bars	..	..	..	@	9	0	0
" Common "	7	0	0	@	7	5	0
Staff. Bl'k Sheet, singles	8	0	0	@	8	2	6
Welsh Bars (f.o.b. Wales)	6	7	6	@	6	10	0

Tin.—The operations moderate and prices irregular. Straits quoted at £94. 15/ @ £95, spot, and £95 @ £95. 5/ for three months' futures.

Copper.—The market unsettled and prices irregular. Merchant Bars sold at £57, spot, and £57. 7/6 @ £57. 10/, three months' futures. Best Selected, £65. 10/.

Lead.—Demand has fallen off and prices rather weaker. Quoted at £14. 2/6 for Soft Spanish.

Spelter.—The demand moderate and prices easier. Quoted at £24. 17/6 for Ordinary Silesian.

The Paola Gas and Oil Fields.—Natural gas for lighting and heating purposes has been used in Paola, Kan., for three years past. The gas was first discovered in 1866, but it is not yet flowing in sufficient quantity for any other than domestic use. About 15 miles of main have been laid, furnishing 500,000 feet of gas per day. No petroleum has been struck, but there is found at a depth of 300 to 350 feet a natural lubricating oil of a rich black color, and having a fire test of 300°, a cold test of zero and a 24 B. oil gravity. The oil is pumped to the surface, and the present yield is 300 barrels per month. Several thousand acres have been developed, and it is thought that the field covers a great portion of Miami County. This lubricant is free from grit, flowing freely, and can be produced at a small cost, because it requires no refining. This is the most important of Kansas oil fields, and that which has produced the most practical results.

An interesting ceremony took place last week at Millom, in connection with the completion of the new sea wall or embankment at the Hodbarrow mines, England. Some idea of the nature of the undertaking may be gleaned from the fact that the value of the plant used by Lucas & Aird, the contractors, is over $100,000. The wall will embrace an area of 33 acres of land reclaimed from the sea. For many years past a valuable hematite mine has been worked on the northern shores of the Duddon estuary. The deposit is 90 feet thick. The ore having been won as close to the sea margin as it has been possible to work it, without letting down the surface of the land and admitting the sea, and the company having recently obtained a fresh lease from Lord Lonsdale, found it necessary to construct a barrier to keep back the sea along that portion of the estuary in front of the mine, in order that they might get at the ore underneath the sea bed. To effect this a massive barrier has been constructed, which excludes the sea from an area of some 33 acres. This barrier is just two-thirds of a mile in length, and for about one-half this length is fully 50 feet in hight from the bottom of the foundations to the top of the parapet. At high water of high spring tides there is a depth of rather more than 20 feet against the seaward face of the work, but being exposed during southwesterly gales to the full force of the waves sweeping up the Irish Channel, banked by the Atlantic rollers, the sea at such times breaks with great violence against the new barrier, as was, of course, expected, and has been provided for in the structure just completed. The engineer of the work is Sir John Coode.

The Cambria Iron Company, of Johnstown, Pa., have closed a contract with J. B. Archer, of New York City, for the erection of a fuel gas plant of the Archer type. This step was made necessary on account of the falling off in the supply of natural gas.

HARDWARE.

Condition of Trade.

WHILE THE JOBBING business is reported active in the principal Hardware centers, as retailers are buying in fair quantities, trade on the whole has not especially heavy volume. This is, of course, what is to be expected at this advanced stage of the season. Manufacturers are generally busy on orders, of which they are receiving a good many for the replenishing of stocks. The tone of the market has not materially changed and is not especially strong. There is some difference of opinion as to the course of prices, and careful buyers are exercising a good deal of caution, thinking that values may recede slightly on some goods which the large demand during the season and exceptional circumstances have given an unusual strength. While the season of comparatively dull trade is approaching there may be a disposition on the part of manufacturers to yield in prices; but, on the other hand, it is thought that the exceptionally prosperous condition of the country and the very large consumption of goods will tend to give steadiness to values. The change in prices during the past week have not been many or important. Collections generally are reported fair, especially in the West.

Chicago.

(By Telegraph.)

The Hardware trade is fully as active as it was last week, with about the same conditions prevailing, Shelf Goods being in greater demand than staple articles. The election seems to have had no effect on the current of orders, which has been flowing so long in a steady stream. The Heavy Hardware jobbers make the same report for their trade. The outlook now is in favor of as large a volume of business as last month. Some of them find it difficult to get Iron fast enough to supply their customers. Collections are very good.

Prices.

Cut Nails.—The New York market for Iron Cut Nails remains substantially as at our last report, at the following prices: $1.80 at mill, $1.90 at dock and $2 for small lots from store. The volume of business is moderate and the tone of the market not especially strong. Steel Nails are held at 10 cents higher than the above prices; but, owing to the low figures made in the West, concessions are made in exceptional cases, by which the prices of Steel Nails closely approximate those of Iron. This is owing to the fact that at Wheeling quotations Steel Nails can be laid down here at a slight advance on the price of Iron. It will thus be seen that the market is in a somewhat unsettled condition.

Chicago, by Telegraph.—Manufacturers' agents report a limited demand. A few carloads have been sold at $1.70, Wheeling, with 25 cents average, but most sales are made at that price without regard to specification. The Junction circular of last week has resulted, as expected, in still lower prices by some of their competitors. Jobbers quote $1.90, but make special prices to suit special circumstances.

Wire Nails.—No further settling in price is reported, quotations being as at our last review, on the basis of $2.25, at mill, from which figure it is understood that concessions are made in exceptional cases. The volume of business is moderate, buyers showing a disposition to hold off.

Chicago, by Telegraph.—Manufacturers' agents, quote $2.30 to $2.40, Chicago, for large lots, but are not doing much business at these low prices. Jobbers quote $2.50, but make concessions according to conditions attending the order.

Barb Wire.—Carload lots of Four-Point Galvanized are held at from 3.10 to 3.20 cents at mill with moderate advances for smaller lots. The demand is light and the market devoid of special feature.

Chicago, by Telegraph.—Hardly enough fencing is now selling to make a price. Jobbers quote 2.90 and 3.50 cents for four pointed and galvanized, but the market is weaker and the rates can be shaded. Manufacturers quote carloads 2.70 and 3.25 cents.

Steel Goods.—The market continues in the satisfactory condition to which reference was made in our last issue. It is understood that outstanding quotations will probably be withdrawn by the manufacturers December 1, and that a moderate advance in prices is likely to be made soon after that date. The condition of the market is reflected in the following advices from an Eastern manufacturer:

Considering that very light stocks were reported as carried over from last season by all makers, and with a demand up to the average of the past few years, there is no probability that any surplus stock will be made up. There is more likely to be a shortage when trade opens.

Of a similar purport are the following advices from a Western company:

We have orders booked for all the Steel Goods we dare promise for the coming season and have been refusing quotations for several weeks. We know of three other manufacturers in the same condition. It appears as if the production would not exceed, if it equals, the demand.

This is the view of the case generally taken by manufacturers and almost all the buyers, who have already placed their orders for next season. It would appear to be the part of wisdom for those who have not yet purchased to place their orders at an early date.

Loaded Shells.—A large business is being done in this line of goods and prices are without material change, the regular quotation to the retail trade being 40 and 10 and 5 per cent., a figure at which they are sold by the manufacturers and frequently by leading jobbing houses. We are advised, however, that some of the latter have recently been advancing quotations and naming 40 and 10 per cent. or 40 and 5 per cent. discount.

Cutlery.—The Henry Sears Company, Chicago, Ill., issue a circular relating to the changes in the price of Cutlery on account of the new tariff, and state that it will be their aim not to advance the prices of the Pocket Cutlery bearing the brand of "Henry Sears & Son, 1865," and that any advances they may make on these goods will be necessitated by such increased cost as they may put upon the goods in the way of quality and finish. They state that the advance in prices on other brands of imported Pocket Knives, Vermont Cutlery Company and Wm. Dartt, represents less than half the actual advance caused by the operation of the new tariff. They have recently added to their assortment of Queen Shears a line of No. 300 Straight Japanned and No. 400 Bent Japanned, and also a line of Queen Scissors, with patent wrought brass bolt and nut with double shoulders.

Wrought Iron Pipe.—The market in Wrought Iron Pipe is very firm, and the mills, with scarcely an exception, report a heavy demand.

Cordage.—Under date November 8 a further decline was made in the price of Cordage by the associated manufacturers. The revised prices are as follows, subject to a discount to the trade on Manila, Sisal and New Zealand of ¼ cent per pound:

	Per pound.
Manila, ½ inch and larger	13¾¢
" ⅜ "	14¼¢
" ¼ and 5/16 inch	15¼¢
" Tarred Rope	13¼¢
" Hay Rope	13¾¢
Sisal, ½ inch and larger	9 ¢
" ⅜ "	9¼¢
" ¼ and 5/16 inch	9¾¢
" Hay Rope	9 ¢
" Tarred Rope	8½¢
" Medium Lath Yarn	8 ¢
New Zealand, ½ inch and larger	9 ¢
" " ⅜ "	9½¢
" " ¼ and 5/16 inch	10¼¢
" " Hay Rope	9 ¢
" " Tarred Rope	8¼¢

This reduction in price, notwithstanding the strength of the raw material, is somewhat perplexing to the trade, and suggests questions in some quarters as to the success of the National Cordage Company in controlling the market. It is understood that some difficulties have been encountered, and it is thought by some that the company will not be able to carry all their plans into effect. In connection with the decline noted above, it is also to be observed that lower prices are ruling for Jute Rope.

Glass.—In our issue of October 30 we announced the completion at Chicago of the organization of the American Window Glass Company and election of officers.

The United Glass Company and certain Western Glass factories at that time joined the American Window Glass Company, and as a result the capital of the company was increased. Under the laws of the State of Illinois, incorporated companies cannot begin operations within 30 days after the increase of their capital. For this reason the meeting adjourned to November 25 for final action, at which time the product of Glass factories in the association will be turned over to the company. It is understood that meanwhile the factories will continue to make sales for delivery not later than December 1 at 80 and 5 per cent. discount for small lots and 80 and 10 per cent. discount in carload lots. It is stated that after December 1 the price at which Glass will be sold by the American Window Glass Company will positively be 80 and 5 per cent. discount in carload lots and 75, 10 and 5 per cent. discount for less quantity, with a rebate system for the protection of the jobbers and wholesale buyers, which will permit the largest among them to sell at the established rates for car lots, which will guarantee them a fair margin of profit, providing they adhere strictly to these rates and confine their purchases exclusively to the American Window Glass Company, signing an ironclad agreement to do so. It is intimated that this feature will be obnoxious to jobbers and wholesale buyers, as it has a tendency to eliminate all elements of speculation and competition, and is inconsistent with the freedom of trade. While Pittsburgh price now is 80 and 10 per cent. discount for carloads, which is the basis of the association price, quotations are made by some Glass brokers and factories at 80, 10 and 5 to 80, 10 and 10 per cent. discount for standard natural gas brands of Glass. The factories which are not members of the company will probably continue to be a disturbing element in the Glass market.

As indicating the condition of the market, the following extract from the circular of brokers in Glass in the western part of New York State in regard to the carload orders will be of interest:

We quote 80, 10 and 5, actual freight allowed, not to exceed the rate from factory at Findlay, Ohio, to Chicago. Terms 60 days acceptance, less 2 per cent. for cash in ten days. The Glass is a standard natural gas brand, and we know the quality would suit you. We are prepared to convince you of this by the shipment of a sample lot at 80 and 10, f.o.b. factory, in case you will favor us with specifications for a carload order. If you are not needing Glass for present wants, the market outlook is such as to warrant the placing of orders several months ahead, and we trust that either for immediate or future shipment you will give our offer favorable consideration. The above quotation is for prompt acceptance, with specifications, which are to be satisfactory.

Miscellaneous Prices. — McIntosh, Huntington & Co., Cleveland, Ohio, quote the *Daisy Air Rifle* in not less than one-dozen lots at $9 per dozen. They announce that they have also in stock the Stanley and Matchless Air Rifles, which they will furnish at bottom market prices.

Washing Machines.—The following are the prices quoted by the Horton Mfg. Company, Fort Wayne, Ind, on their Washing Machines:

	Per dozen.
No. 1 Western Washer	$48.00
No. 2 " "	48.00
No. 3 " "	51.00

Shoe Knives &c.—We give below the prices of the I X L Shoe Knives, &c., which are manufactured expressly for the Hardware trade by F. W. Coburn, New Durham, N. H. The prices given are net, discounts being allowed on large quantities:

	Per doz.
Nos. 1, 2, 3, 4, 5, Square Points	$1.00
No. 6, Square Points	1.25
Nos. 5, 6, Skivers	2.00
No. 7, Skivers	2.50
Nos. 1, 2, 3, 4, 5, Curve	1.00
No. 6, Curve	1.25
Nos. 1, 2, 3, 4, Sharp Points	1.00
Nos. 0, 1, 2, 3, 4, Hawkbills	1.00
Lowell Pattern	1.25
Butcher Knives, 6-inch	2.50

Baking and Roasting Pans.—The following is the price-list of the Excelsior Baking and Roasting Pan, manufactured by M. F. Koenig & Co., Hazleton, Pa., a description of which was given in a recent issue. The list is subject to a discount of from 40 per cent. to 40 and 10 per cent.:

No. 1, 6½ inches wide, 10 inches long, 5 inches deep	$1.20
No. 2, 9 inches wide, 13½ inches long, 6½ inches deep	1.50
No. 3, 12½ inches wide, 16 inches long, 7 inches deep	2.00
No. 3½, 12½ inches wide, 16½ inches long, 8 inches deep	2.25
No. 4, 13 inches wide, 18 inches long, 8 inches deep	2.50
No. 4½, 14 inches wide, 19 inches long, 9 inches deep	2.75

Riddles.—James J. Tristram, Jr., 195 Water street, New York, has recently made a reduction in the prices of his Riddles for export and foundry use. The following are the revised prices on these goods:

	Per dozen.
Brass Riddles, for foundry use, extra heavy, 16-inch	$6.00
Brass Riddles, for foundry use, extra heavy, 18-inch	7.00
Brass Riddles, for foundry use, extra heavy, 20-inch	8.00
Galvanized Riddles, for foundry use, extra heavy, 16-inch	4.00
Galvanized Riddles, for foundry use, extra heavy, 18-inch	4.50
Galvanized Riddles, for foundry use, extra heavy, 20-inch	5.00
Iron or Steel Riddles, for foundry use, extra heavy, 16-inch	3.50
Iron or Steel Riddles, for foundry use, extra heavy, 18-inch	4.00
Iron or Steel Riddles, for foundry use, extra heavy, 20-inch	4.50
Iron Riddles, for export, 18-inch	3.50
" " " 20 "	4.00

Indurated Fiber Ware. — Cordley & Hayes, 173 and 175 Duane street, New York, announce, under date November 1, a reduction of 25 per cent. in the price of Indurated Fiber Wash Basins and Dish Pans, one size only of each being now made. The list price of the Wash Basins, No. 2, is thus made $3.60 per dozen, and the Dish Pans, 17 quart, $12 per dozen. Special attention is called to these reductions in view of the probable advance in Tinware, and the quality, durability and cheapness of Indurated Fiber Ware as compared with Tin are emphasized. The addition to their line of Flower Vase, No. 0, 8 inches in diameter and 13 inches deep, and listed at $7.20 per dozen, is also announced.

Competition No. 5.

THE Committee of Award in this competition received a very large amount of matter relating to the use of *The Iron Age* in Hardware stores. There was thus indicated not only the value of the paper to the Hardware trade, but a great many suggestions were given as to how it can be used to the best advantage, so that the merchant may derive from it information which will be of service to him in his business. The question as thus discussed was proven to be a very practical one, in which our readers will doubtless be interested when some of the leading contributions are laid before them.

The Committee of Award has made the following decisions: That the first prize be awarded to John B. B. Douglas, New York, and the second prize to C. W. Locke, Lowell, Mass.

In this connection we desire to make our acknowledgements to our many friends in the trade who participated in these discussions. Coming as the contributions did did from all parts of this country as well as from foreign lands, from the largest wholesale houses as well as from retail merchants, a striking evidence is given not only of the position occupied by the paper, but also of the esteem in which it is held. We appreciate very highly the interest of our readers in the matters to which the different competitions have related, and their co-operation in the efforts which we are making for the obtaining of information relating to Hardware methods, with a view to the advancement of the interests of the trade. We are thus aided in our endeavors to make *The Iron Age* of constantly increasing service to its readers.

Trade Items.

ALLEN G. WOOD, Utica, N. Y., manufacturer of Quick-Shine for polishing brass, metals, &c., silverware, precious metals, plate glass, &c., band instruments, &c., advises us that the Quick-Shine has been improved, doing away with the dirt so peculiar to many metal polishes, and can be used without soiling the hand. It is stated that Quick-Shine is as soft as common cylinder grease, but will remain firm in the pail or can when the latter is turned bottom side up with the cover off, and does not harden nor cake down. The Quick-Shine is referred to as meeting the demands of the export trade.

JOHN HOSFORD, Monroeville, Ohio, manufacturer of the American Wire Screen Holder, advises us that this Holder is meeting with flattering success, dealers in Wire Cloth finding it a most convenient way of handling the Cloth. It is also having a foreign demand, which is regarded as likely to increase.

THE OREGON IMMIGRATION BOARD, Portland, Ore., issue a pamphlet of 64 pages, entitled "Portland, Ore.," relating to Portland and vicinity. Illustrations and descriptions are given of points of interest, public and private residences, factories, &c. The work is intended to afford information to those desiring a more thorough knowledge of Portland and the Northwest.

THE WIRT & WAIT MFG. COMPANY, Independence, Mo., manufacturers of Wirt's All Iron Hose Reel, will soon put

upon the market larger sizes of Reels for factory and warehouse use, which will hold from 200 to 400 feet of 2½ inch fire hose.

MRS. S. WATERMAN, Milwaukee, Ill., is about improving her Self-Heating Sad Iron by using a number of bill shaped receptacles arranged on the inside of the iron to prevent any particle of ashes or sparks from escaping, at the same time creating sufficient draft.

CHARLES STALLMAN, San Francisco, Cal., announces that on October 1 Theodore Kneppers became a full partner in his business, which will hereafter be conducted under the firm name of Pacific Tool and Supply Company.

THE KEENE MFG. COMPANY, Keene, N. H., manufacturers of Whepley's Patent Long Reach Club Skate, announce that they are now prepared to furnish the trade direct with these Skates. A complete assortment has been manufactured, which will enable them to ship orders promptly.

THE HORIZONTAL FREEZER COMPANY, Philadelphia, Pa., advise us that for the coming season they will be prepared to make special inducements on Freezers in small sizes for family use.

A LETTER has recently been published by W. J. Millard, treasurer of the Clayville Mfg. Company, showing that the advanced price of Axes is not due to the revised tariff, a fact which is, of course, obvious to every well informed Hardwareman. Relating to the ruling prices and the necessity for the advances represented by them, Mr. Millard writes as follows:

The price of Axes has declined in the past 15 years from $12 to $5.25 per dozen, or until there was no profit to the producers; and in said period no less than nine factories, in this State alone, have been abandoned for the simple reason they could not be run at a profit.

In justice to themselves the manufacturers have determined to advance prices to a fair basis, and are now endeavoring to maintain the price at $7.50 per dozen. The jobber can supply the retailer at $8.50 per dozen. The retailer can supply the consumer at $1 each, or about the price the consumer has paid for years past.

ON THE 1ST INST. Cyrus B. Martin was chosen president of the David Maydole Hammer Company, Norwich, N. Y., to fill the vacancy occasioned by the recent death of the president. Mr. Merritt's widow, Camelia E. Merritt, was made vice-president, and a daughter, Mrs. Dunham, was elected a member of the Board of Trustees to complete the necessary number, four.

UNDER DATE November 1 it is announced that the business of Hardwicke & Ware, jobbers in Engineers' and Plumbers' Supplies, 300 Washington street, Buffalo, N. Y., has been purchased by the Hardwicke & Ware Mfg. Company, who will continue it at 451 to 457 Washington street, to which point they have removed. The debts and credits of the old firm will be assumed by their successors. Accompanying the announcement of this change is an illustration of the new premises occupied by the company, a handsome building 57 x 130 feet and five stories high.

IT HAS FOR SOME TIME been understood that negotiations were under way looking to the purchase by the Nicholson File Company, Providence, R. I., of the plant of the New American File Company, Pawtucket, R. I. These negotiations have finally been consummated, and under date November 1, the New American File Company annouuce that they have transferred their real estate, plant, machinery, good will, stock of goods, &c., to the Nicholson File Company, who will assume all unfilled orders and continue the business. All outstanding accounts for goods invoiced prior to November 1, 1890, should be remitted to Jos. E. Jenckes, treasurer, P. O. Box 331, Pawtucket, who will also pay all outstanding accounts contracted by the company prior to November 1. The Nicholson File Company under the same date also announce that they have become the owners and assumed the management of the New American File Company, and state that they intend to give to the business of the absorbed company the benefit of their long experience as File manufacturers. Reference is also made to their intention to furnish reliable and serviceable Files of the American brand, at low prices, and of such kinds and sizes as are in sufficient demand to warrant their manufacture at the Pawtucket works.

GREAT ARE THE FACILITIES for producing goods in this time of lively competition among sellers. A Western Cutlery house give their customers the opportunity of ordering goods in their line with the privilege of returning at the expense of the sellers any goods not wanted, if this is done upon receipt of goods. They explain that they much prefer to extend this courtesy to their customers, as by this means they are enabled to examine the goods and prices and retain only such as are desirable for their particular trade. The purchasers thus can inspect goods without risk or expense beyond that of transportation to them.

B. F. AVERY & SONS, Louisville, Ky., have a mammoth advertisement occupying two pages in the *Courier-Journal* of the 8th inst., with illustrations and descriptions of their goods. A view is also given of their extensive works, together with a portrait of Benjamin F. Avery. It is stated that their catalogues have been issued annually for the past 62 years.

MERIDEN MALLEABLE IRON COMPANY, Meriden, Conn., issue a budget of circulars showing Brass and Iron Shelf Brackets in new designs. Some of these are quite novel and artistic. They are used for shelves principally, but some of the larger sizes are especially adapted for lavatory work.

Illustrations in Retailers' Advertisements.

IN CONNECTION with a catalogue and illustrated price-list of Curry Combs, received from the Southington Cutlery Company, Southington, Conn., we are advised by the manufacturers that they have electrotypes of these goods, suitable for advertising purposes or trade price-lists, which they will be pleased to furnish to merchants who will make good use of them. This is an illustration of a courtesy which other manufacturers are doubtless prepared to extend to their customers. And yet, in looking over the daily or weekly papers that are published in the towns and smaller cities, the lack of cuts or illustrations in the Hardware advertisements is very noticeable. The average advertisement in the county paper of a Hardwareman occupies a space probably about 2 inches square. Sometimes the reading matter is not changed for a year at a time. We remember seeing an advertisement one summer in a weekly paper which mentioned winter and holiday goods, which was dated December four years before. As illustrating, on the other hand, energetic and enterprising advertising, we recall the case of two young men who bought out an established Hardware business in a small town, but for two years changed their advertisement every week, inserting cuts when they could be obtained, giving good live matter, in an attractive way, and identifying their name with their goods. It is not necessary to enlarge upon the results of these two methods of advertising. In the first case no new customers were made, though the towns were about the same size, while in the second instance almost every subscriber lookod for this advertisement among the first things upon opening the paper, and the firm drew trade for 20 miles around. One of their competitors complained bitterly about the injury his business sustained because of this persistent advertising. We suppose that every country Hardware merchant believes in a general way that advertising is a good thing. He pays, perhaps, for a certain space in the paper by the year. The editor reminds him that his advertisement of Screen Doors and Refrigerators is not seasonable for November aud December, and the merchant promises to have something ready the following day to replace the present matter. The next day the representative of the paper calls, and, as the subject has slipped the merchant's mind in the meantime, nothing is prepared. To get the matter out of the way an advertisement is written in a hurried manner, which is likely to remain in the paper until he is again reminded that spring demands another class of goods. We would suggest, as an improvement on this slipshod way of advertising, that the merchant who wishes to be progressive should request that cuts of leading seasonable goods should be furnished him for advertising purposes, and insert these cuts a little in advance of the time when the actual demand for these goods begins. Scarcely anything in a paper attracts attention as a picture, and we know of no class of publications that are more thoroughly read than the daily or weekly country paper. We have spoken particularly of the merchants outside of the large cities, as there is no lack of live, illustrated advertising matter in the city papers. If our readers would follow the example of their city cousins in this particular, we are sure they would see beneficial results.

Fence Machines.

THE ADOPTION of Picket Fence, made by weaving wood or iron pickets with wire has encouraged the inventing of Fence Machines, of which a number are now upon the market. These machines are of two classes, those that are portable, which weave the Fence in the field, and the stationary machines, which are run by hand or power. The following manufacturers make portable machines:

S. H. Garrett, Mansfield, Ohio.
O. D. Reeves & Co., Richmond, Ind.
Empire Machine Co., Richmond, Ind.
M. C. Henley, Richmond, Ind.
Griffith & Wedge Co., Zanesville, Ohio.
The Wayne Works, Richmond, Ind.

The principle upon which all these machines do the work is that of twisting three or more strands of two wires each on each side of the pickets. This is accomplished by a crank attached to gearing or endless chain. The stationary Fence Machines have reels for holding the wires, which are usually revolved by gearing;

thus the strands of twisted wire are produced. The machines are made both perpendicular and horizontal, the larger number, however, being horizontal. The following are the manufacturers of stationary fence machines:

C. Wright & Son, Dayton, Ohio.
O. Moseley, Peru, Ind.
Fillebrown & Son, Piqua, Ohio.
Standard Mfg. Company, Cincinnati, Ohio, and the
Hoosier Drill Company, Richmond, Ind.

Some of these machines are automatic in their workings, as they feed and count the pickets, spool the wire, twist the wire, measure the fencing and roll it into rolls ready for shipping or for use.

A Novel Gun Case.

A SUITABLE PLACE to keep Guns is with many a Hardwareman a perplexing question. Often there is no available wall space to have a case built in, nor does it seem advisable to take floor space sufficient for a long, narrow case anywhere outside the counters. The accompanying

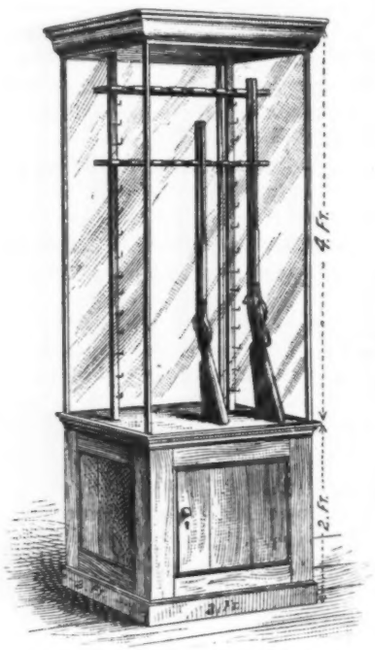


Fig. 626.—A Novel Gun Case.

illustration, Fig. 626, of a novel Gun Case, for which we are indebted to Bogardus & Co., Mt. Vernon, Ohio, shows an ingenious arrangement by which a number of Guns can be displayed to good advantage in a small space. It stands 2 feet square on the floor and 2 feet high to the top of the cupboard. The case above is inclosed on the four sides with glass. The uprights in the center are 1 inch square, and near the top are two boards nearly 2 feet long and 4 inches wide, perforated with suitable notches to receive the muzzles of the Guns. It will be seen that these boards are of different hights to accommodate Guns of different lengths. The case is made to open at front and back, so Guns may be taken from either side. On the uprights are a number of hooks for the accommodation of Revolvers and plated Loading Tools, the bright surfaces of these making a marked and pleasing contrast with the dark Guns. The cupboard underneath may be used for duplicate stock of Revolvers, Loading Tools, Shells, &c., the lock on the door giving the desired security.

Price-Lists, &c.

DUDLEY BROS. & LISCOMB, Nashville, Tenn., importers and wholesale dealers, issue an illustrated catalogue and price-list of Guns, Ammunition, Sporting Goods, &c., for 1890 and 1891. A list is given of the Gun and Cartridge manufacturers for whom they are agents. Tables of the comparative size of shot, showing the number of soft and chilled Shot Pellets to the ounce, together with other points of interest to the sporting man, are found on the last page.

The Rochester Lamp Company, New York, Chicago and Paris, issue a No. 27 illustrated catalogue, 11 x 13¼ inches, of some 125 pages, 1890 and 1891, devoted to Library Lamps, Hall Lamps, Pendants, Reflectors, Extensions, &c., with the Rochester Founts and Burners. The line is too extended to give an individual description of each style; the designs, however, are handsome and of almost endless variety. They also send out another catalogue, No. 28, the same size, 110 pages, illustrating Piano, Table, Banquet and Study Lamps of bronze and other metal; Decorated Porcelain and Wrought Iron, mammoth Rochester Fonts and Harps and other Hanging Lamps. Representations are given on the front cover of their buildings in Rochester—Home of the Rochester—Chicago branch and Paris branch; also of their Lamps as used in parlors and halls. The back page of the cover is devoted to an interior view of their New York wholesale salesroom. An interesting feature of this catalogue is a description of Lamps from those of Pompeii to the present day, showing the advance in light producers from the pitch knot to the perfected Lamp. Illustrations are given of the improvement in lights after the time that skulls of animals or sea shells filled with fat were used, beginning with the Roman Lamp, year 400 B. C. The next is the Candlestick, followed by the Float Lamp. Then the sperm oil Lamp, 1820–45, and the Camphene Lamp, 1842–60. The discovery of kerosene oil in 1859 soon revolutionized the artificial light of the world. It did not take Connecticut Yankees long to adapt a Lamp to burn it. First the flat wick burner was used, which, with modifications, is in use to-day. Then came the Argand, or round flame, after which the Central Draft, with the Button Flame Spreader. The Rochester Lamp is an application and improvement of this central draft principle.

The Union Horse Nail Company, Chicago, Ill., manufacturers of the Star Horse Nails, issue a circular price-list relating to these goods. These are described as made from the best Swedish Charcoal Iron, with large or small heads, and either polished or blued. They state that the blued Nail is in every respect the same in size and quality as the polished. All boxes are marked with a red star, the trade mark of the Union Horse Nail Company. They also send a show card in colors, with metallic ends, to be used as an advertising medium in places of business.

The Standard Thermometer Company, Peabody, Mass., issue a catalogue and illustrated price-list of metallic Thermometers, for mechanical, electrical and other uses; also a catalogue of Telemeter Instruments, Indicating and Recording Thermometers, Steam Pressure, Tide and Water Gauges. The purpose of the Telemeter system in which these instruments are used is to transmit to distant points the indications of Thermometers, Barometers and Pressure Gauges; also the hights of water or of gas in a gasholder and rise and fall of tide. In addition to the various instruments shown in these catalogues, the company inform us that they make to order many special instruments from designs and models, both electrical and mechanical.

Reardon & Ennis, Troy, N. Y., roofing contractors and manufacturers, send us circulars of their manufactured goods, illustrating Electric Ventilators, Railroad Patent Ventilated Dinner Pails, Electric Dust and Crumb Pan, and Saulson's Ventilated Dinner Pails. The advantages of these articles are set forth in the descriptions.

The Samuel Winslow Skate Mfg. Company, Worcester, Mass, issue an illustrated price-list of Ice Skates for 1890–91. This shows Gentlemen's Skates in seven styles and Ladies' Skates in ten styles. They give a table showing the relative sizes of Shoes and Skates; also a telegraph code for the sizes of Skates wanted and number of pairs wanted. They also carry a line of the Vineyard Roller Skates.

Manning, Bowman & Co. have issued a map of North America, the card being 9 x 14 inches, with metallic ends. It calls attention to their patented specialties—*i. e.*, Perfection Granite Ironware and decorated Pearl Agateware. Illustrations are given of their Continental Steam Coffee Maker and Cereal Cooker. The advertising matter is so placed as not to interfere with the usefulness of the map.

The St. Catharine's Saw Works, St. Catharine's, Ont., R. H. Smith Company, proprietors, issue a catalogue and illustrated price-list of Saws, Plastering Trowels, Straw Knives, &c. This shows Rip and Crosscut Circular Saws, Thin Back Crosscut Saws, Hand, Back, Butcher and Wood Saws, Ice Tools, Corn Knives, Trowels, &c. They are manufacturers of the Simonds Saw for the Dominion of Canada. W. L. Haldimand & Son are agents for the above company, with headquarters at Montreal.

Pratt & Letchworth, Buffalo, N. Y., issue a card calendar for November, advertising their Buffalo Harness and Saddlery Hardware, Carriage and Wagon Malleables, &c. This is in the same style as the others that have preceded it for 1890.

The Troy Stamping Works, Troy, N. Y., issue price-list C, relative to Iron Goods, Hods, Shovels, Stove Boards, Hollow Ware, &c., and a price-list of Heavy Polished Tinware, Planished Ware and Copper Goods, embraced in Class G. They state that they are making a line of Pieced Tinware from IX and IXX Tin Plate nicely polished, which they recommend as first-class goods.

The Starr Mfg. Company, Halifax, N. S., Canada, issue their twenty-third annual price-list of the genuine Acme Skates, of which they are manufacturers. The following points are referred to: That the method of fastening is simple, secure and effective; that the material and workmanship are of the highest character; that they have been tried and tested by the public for over 20 years.

Seavey Mfg. Company, 93 to 97 North street, Boston, Mass., manufacturers of Plain, Stamped and Japanned Tinware, Kitchen Furnishing Goods, &c., issue a supplementary catalogue of new goods. Attention is called to the fact that they also manufacture a full line of Ovens, Trimmings and Furniture for the different styles of oil stoves.

The Tucker & Dorsey Mfg. Company, Indianapolis, Ind., manufacturers of Alarm Tills and Hardware Specialties, issue a circular illustrating the Tucker Improved Factory and Wareroom Truck. The platform between standards is 48 x 28 inches;

side wheels 13 inches diameter, 2½-inch face, with a 1-inch steel axle. These Trucks they recommend for all kinds of manufacturers, furniture, woodenware and box factories, wholesale dealers, &c. The statement is made that the use of these Trucks will save 50 per cent. of the cost of handling goods by other methods.

The Raymond Lead Company, Chicago, Ill., send circulars relating to their Drop and Buck Shot, Lead Pipe, Sheet Lead, Solder, Block Tin Pipe, Raymond's Combination Ferrules, Lead Traps, Solder, Babbitt Metals, Mixed Metals and specialties in Lead, of which they are manufacturers. They state that their establishment is not in any combination, consolidation, pool or trust, and consider that buyers in all parts of the country will further their interests by obtaining their special prices before placing orders.

The Youngstown Stamping Company, Youngstown, Ohio, issue a 90-page catalogue and illustrated price-list of Pieced Ware, Stamped Ware, Japanned Ware and House Furnishing Goods. They announce that their new factory, built within the past year, is in direct communication with five railroad lines, making shipping facilities excellent, with additional advantage of strong competition in securing low freight rates.

The Columbia Varnish Works, St. Louis, issue a circular relating to Floor Gloss, with a number of samples, showing the different colors. A number of advantages are mentioned as resulting from the use of this Gloss, among which are that it is odorless and dries instantly; also that it renders floor scrubbing and scouring unnecessary.

H. M. Quackenbush, Herkimer, N. Y., issues an illustrated price-list of goods manufactured by him. These consist of Air Guns, Rifles, Darts, Slugs, Targets, Nut Picks, Stair Carpet Rods, Lathes, &c. Prices and illustrations of Air Gun Parts are also given.

C. F. Richardson, Athol, Mass., issues circulars illustrating a number of fine Tools manufactured by him. Those shown are the Boss Scratch Gauge, Iron Levels, Leveling and Squaring Instrument and Architects' and Carpenters' Transits. These Tools are warranted accurate and well made, and it is stated that any imperfections will be made good.

The Pullman Sash Balance Company, Rochester, N. Y., are sending to the trade a card relating to their Pullman Sash Balance. This gives the list price, also the length and weight of Sash for which each size is adapted.

The Smith & Egge Mfg. Company, Bridgeport, Conn., send circulars of their manufactured goods. These are descriptive of Eureka Patent Shears, Chantrell Bit Braces, Adjustable Socket Wrench, Giant Drill Chuck, Government and Giant Padlocks, Sash Chain, Jewett Spring Butts, Window Sash Pulleys, &c.

The Sandage Steel Skein Company, South Bend, Ind., send us cards illustrating the Sandage Wagon Skein, and giving price-list of the same. One of the cuts shows the Sandage Steel Skein as sent to market with a red label giving the size and hand. The square shape of the underside of the Axle is referred to as a popular feature, whereby the fibers of the wood are preserved, and as forming a strong and important brace to the shoulder of the Axle and Skein. It is claimed by the manufacturers that the solid steel collar gives double strength, and makes the Skein practically impossible to break.

The Winchester Repeating Arms Company, New Haven, Conn., issue an illustrated catalogue and price list relating to single Shot Rifles, Rifle Muskets, Carbines, Hunting and Target Rifles, Repeating Shot Guns, Hotchkiss Magazine Fire Arms for military and sporting use and Metallic Cartridges of all kinds. They also manufacture Paper and Brass Shot Shells, Primers, Gun Wads, Reloading Tools, &c.

John Moore, 53 to 59 Warren street, New York, Carriage and Sleigh builder and manufacturer of Harness and Horse Clothing, issues a catalogue relating to these goods. Everything necessary for equestrians is referred to as included in his stock.

The Stow Mfg. Company, Binghamton, N. Y., issue a No. 3, 1890, illustrated price-list of the Stow Flexible Shaft, of which they are inventors and manufacturers. These Flexible Shafts can be used for drilling, reaming, tapping, grinding, polishing, &c. Their Flexible Boring Machine is referred to as being light, compact and durable, and can be used over an extensive floor space. The illustrations show a large range of work to which this device may be adapted.

The Buffalo Toy Works, Buffalo, N. Y., issue a descriptive catalogue, illustrating their indestructible malleable iron and steel Toys. They show vehicles with horses attached, as dray, dog cart, hansom, single truck, double truck, barouche, fire engines, hose carts, railroad trains, &c. The manufacturers inform us that their aim has been to make a superior line of Toys, and state that they are higher priced than many lines of a similar character in the market, but have become very popular with the trade.

Walbridge & Co., Buffalo, N. Y., jobbers in Hardware, issue a 120 page illustrated circular of fall and winter goods. The articles shown comprise a line of season goods required by retailers at this season of the year, and will be useful to make present selections from as well as for future reference. We notice goods which have recently been put upon the market, which are included in their stock. We have received from tho same firm their 40-page Lamp catalogue, relating to Lamps, Lamp Goods, Lanterns, Silver Plated Ware, &c.

The Moline Pump Company, Moline, Ill., issue an illustrated catalogue relating to the Victor Windmill and goods pertaining to Windmills. The cuts show mills fitted up and detailed parts; also repairs for the Victor Mills. A portion of the catalogue is devoted to Tanks, Windmill Pumps, Pump Cylinders, wrought iron Pipe Fittings and Pipe Tools. The last page contains numerous testimonials from those using the Victor Mills.

The Simonds Mfg. Company, Fitchburg, Mass., Chicago and San Francisco, issue a pamphlet of Reference Tables for millmen, sawyers and filers. Topics of interest are treated, such as "Hints to Sawyers and Filers," "Weights of Different Woods in Board Measure," "Notes on Speed of Pulleys," &c.

The Fay Mfg. Company, Elyria, Ohio, manufacturers of the Fairy Tricycle, issue catalogues and price-list of these goods. They make a specialty of machines for cripples and invalids. In this connection they state that while their catalogues show a limited number of the styles of the machines they make for cripples, they have yet to find a person so badly deformed or crippled that they have failed to supply with a machine to do good service and run satisfactorily.

Samuel C. Rogers & Co., Buffalo, N. Y., manufacturers of Rogers' Saw Filer and Gummer, issue a vest pocket and monthly tickler, with blank pages for memoranda, advertising their Saw Gummer. The suggestive parts of the tickler are the notes supposed to have been made from day to day by the mill owner, showing in an interesting way the desirability of using the Rogers Saw Filer and Gummer.

The Manly Mfg. Company, Dalton, Ga., issue a circular addressed to sawmill men, and you, calling attention to the improvements recently made in their Circular Sawmills.

Craighead & Kintz Company, 33 Barclay street, and Ballard Vale, Mass., manufacturers of artistic Bronzes, Metal Goods, Piano and Banquet Lamps, Oil Fixtures, &c., issue an illustrated catalogue and price-list for 1890 and 1891. This is about 11 x 14 inches, containing nearly 190 plates, and relates to Lamps and Oil Fixtures. The manufacturers direct especial attention to their Daylight Lamps, having a central draft, which they state are not intricate in construction, are not liable to get out of order, and can, when necessary, be rewicked with facility. Noticeable among the plates are those of Lamps in colors on tinted paper which will give to those unable to order from sample an accurate idea of the appearance of these goods. The catalogue throughout presents a fine appearance, showing a large variety of styles of Lamps, Shades and Oil Fixtures.

The Binghamton Wire Goods Company, Binghamton, N. Y., issue an illustrated catalogue of Staples, Double Pointed Tacks, Wire Nails, &c. Particular attention is directed to their Blind Staples. They state that their Chisel Point Staples are in use by some of the largest mills and are especially desirable for hard wood Slats.

The Wheel and Seeder Mfg. Company, Fond-du-Lac, Wis., manufacturers of the Fountain City Seeder, Ashurst Press Drill, Davis Shoe Drill, Fountain City Hoe Drill, Yankee Hay Rake, Yankee Land Roller, Fargo A Center and Reversible Harrows, issue a catalogue of these goods.

John J. Frye, Portland, Maine, issues a catalogue relating to his New Model Mower, Iron and Steel Plows, Cultivators, Harrows, &c. Illustrations are given of the different machines and implements.

The David Maydole Hammer Company, Norwich, N. Y., issue an illustrated catalogue and also a price-list of their Cast Steel Hammers. This catalogue shows their full line of Hammers, presented in an attractive manner.

Smith & Courtney, Richmond, Va., issue a special illustrated catalogue of Railroad and Contractors' Tools. They also issue an illustrated price-list of Milburn's Wood Split Pulleys, Dodge's patent, for which they are Southern sales agents. In connection with these goods they carry in stock Belting, Lacing, Rivets, Belt Hooks, Shafting, Iron Pulleys, &c.

The Standard Scale Company, Rome, Ga., issue price-list circulars relating to Scales, Trucks, Testing Machines, &c. They manufacture over 100 varieties of Scales, including Railroad Track, Wagon, Platform, Suspension, Transportation, Furnace, Depot and Warehouse Scales. Attention is directed to their improved Suspension Charging Scales for furnaces.

The Whitehead Bros. Rubber Company, Trenton, N. J., manufacturers of Rubber Goods of every description for manufacturing and mechanical purposes, issue a price-list of these goods, with every alternate leaf blank for memoranda, making it a convenient note book.

The Standard Flint Paper Company, 284 Pearl street, New York, and Arlington, N. J., issue circular price-lists of Flint Paper, Emery Paper, Emery Cloth, Crocus Cloth, Garnet Paper, Glue, &c. The

statement is made that the chief merits of their Ground Flint are hardness, quick cut and perfect grade. Their process of manufacturing is referred to as breaking the grain so as to leave the edges sharp, and in grading all soft particles are eliminated and a hard resisting surface presented.

The Rome Iron Works, Rome, N. Y., are operating in connection with their other business the Rome Brass and Copper Mills. They issue a circular price-list, illustrating Brass and German Silver Checks and Key Tags, together with price-list of Copper Bottoms, Pits and Flats, Copper Rods and Bolts, Sheet Copper, Copper and German Silver Wire, &c.

The Prescott Hardware Mfg. Company, 78 and 80 Randolph street, Chicago, Ill., manufacturers of Prescott Trackless Sliding Door Hangers for house, barn, depot, elevator and shed doors, issue an illustrated catalogue of these goods. The point is made that these Hangers are applied in houses to the jamb on one side of the sliding door after the plastering is completed and the interior finish in place. The Hanger is screwed to the jamb and covered by a wide stop. It can be adjusted by taking off the stop and altering the set of the Hanger.

Rack for Belting.

LARGE ROLLS of Rubber or Leather Belting standing on the store floor are hard to retail from, and lying on the counter they are in as objectionable a position. Racks arranged with one shaft for a number of sizes are undesirable, as

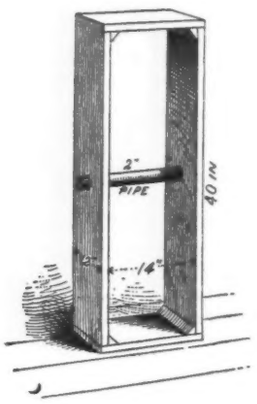


Fig. 627.—A Rack for Belting.

one size of Belt may be exhausted before the others, and to fill the vacancy, part or all have to be taken down before hanging the new roll. As obviating these objections a very simple and meritorious arrangement has been brought to our notice by E. L. Gerard, of Brown & Gerard, Kosciusko, Miss., who is the originator of this idea. The material recommended for use in making the Rack shown in Fig. 627, is a plank 1¼ inches thick and 12 inches wide, made into a box without top or bottom, the inside measurement being 14 x 40 inches in the clear. A 2¼-inch hole is bored through both sides, 20 inches from the end. An 18-inch piece of gas pipe, whose outside diameter is 2 inches, is used for the shaft. Pieces were nailed in the four corners to make the box more rigid. The roll Belting is stood on edge and the box let down over the roll, putting the gas pipe through the center, as shown in Fig. 628. The Belting can now be rolled to any part of the store by one man, and the Rack set on end, as in Fig. 629, in its permanent place. The sizes of the boxes may be made to conform to the various sizes and widths of the rolls of Belting.

Manufacturers and the Export Trade.

THE F. B. WHEELER COMPANY, 59 Pearl street, New York, is an association for the purpose of representing manufacturers to the export trade, and the object of the company and their method of operation is explained quite fully in a pamphlet which they issue. The organization was effected about a year ago,

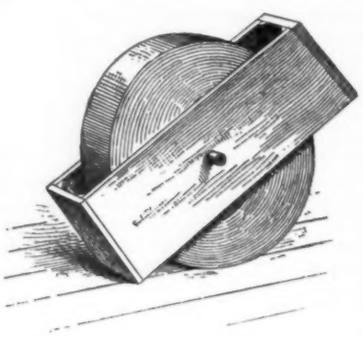


Fig. 628.—Mode of Putting Belt in the Rack.

the business of F. B. Wheeler, which was started a little over five years ago, when Mr. Wheeler took a staff of travelers to Anstralia to represent some leading manufacturers and push their goods in the Australian colonies, being taken as a nucleus. On their organization the company were thus given the advantage of the connections thus established and had familiarity with the field, with financial and business arrangements furnishing the necessary foundation for their further operations. The capital of the company was placed at $150,000, the incorporators being F. B. Wheeler, Daniel B. Halstead, Charles E. Jennings and A. G. Peck, all of New York, A. W. Woolsey, of Jersey City, and Henry C. Howell, of Newark, N. J. The balance of the company's capital stock was offered for subscription to manufacturers whose lines were considered desirable to handle and who were invited from time to time to join the association on the same basis as the original incorporators.

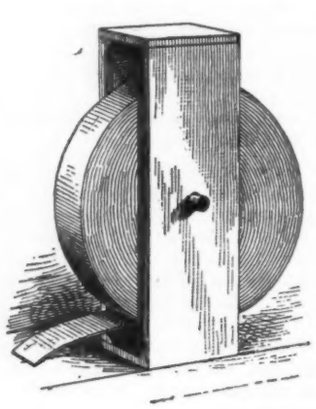


Fig. 629.—Belting Ready for Measuring.

From that time up to date considerable further capital has been taken. The special feature of this departure, which is a comparatively new one, is that it is an association of manufacturers who are stockholders in the company, and who by them are brought into direct relations with the foreign buyers. Apart from the purchase of a moderate amount of stock, manufacturers, as we understand the matter, who are represented by the company are subject to no expenses, except for samples and the transportation of them to the offices in the colonies and the payment of a small commission on actual sales by the company's representatives. The company have thus far confined their efforts to the Australian colonies, but we are advised that they contemplate opening up the field in South Africa shortly, as this is an excellent market for many descriptions of American manufactures and products. Later, we understand, they propose to send travelers to South American ports in furtherance of the interests of the manufacturers whom they represent. In regard to their facilities in Australia and their method of operation, they advise us as follows:

The company have adequate sample rooms and business accommodation in the city of Sydney, New South Wales, and the business at that end is cared for by Mr. W. E. Bayley, who was a partner in the original business. The company employ a number of travelers most of whom have been with them from the beginning, all experienced men, who periodically visit the different parts of the colonies, taking with them samples and price-lists and prepared to quote American goods suitable to the respective buyers. The orders gathered in by the travelers from time to time are sent to the headquarters at Sydney, and mailed monthly to the shipping office in New York. From there they are dispatched to the various manufacturers to fill and forward, and payment is made for same shortly after their receipt in New York. The manufacturer is therefore represented abroad in an efficient manner without any expense beyond the small agreed commission on actual sales, thus obtaining a cash trade without further responsibility. The samples which are used where necessary in pushing goods abroad are held for manufacturers' account until such time as it is considered advisable to sell them, when the net proceeds are remitted and the samples renewed.

Arrangements, it is further explained, may be made by parties who are not stockholders for representation abroad, provided the goods they manufacture do not clash with other lines represented by the company. In these cases the manufacturer is required to pay a certain proportion of the expenses incurred in handling his goods abroad—at least for the first two or three years, or during such time as it is necessary to make buyers acquainted with the line of goods, there being always a certain amount of introductory work necessary, for which the manufacturer is called upon to pay his share. The company, therefore, make the point that it is much more to the manufacturer's advantage to become a stockholder so long as the opportunity remains open. The company advise us that from the time of incorporation until the present the business has continued in a satisfactory manner and that manufacturers have secured a good foreign trade in this way.

Cost of Goods.

BY J. W. STEWART, ROCK ISLAND, ILL.

THREE THINGS are requisite to a systematic care of prices—a catalogue, a letter cabinet, and a memorandum book.

A catalogue of general hardware is indispensable in a hardware store. It should be the foundation stone of prices; the study of both buyer and seller. If the business will not justify the printing of one, procure it from a jobber with whom you deal. Cut out pages of superfluous matter, if there be any, and paste in pages of needed matter, so as to embrace lists and illustrations of everything you

handle. A good catalogue may be made by binding in one volume the desirable parts of several catalogues, and inserting a quantity of blank pages for new goods.

Quotations come to the buyer in three ways—namely, mail or wire, verbal, and through commercial papers. For ready reference to circulars, letters and telegrams no device is superior to the Cabinet Letter File, where they are alphabetically arranged—Bolts under B, Locks under L, Nails under N, &c.

For keeping verbal quotations a buyer should have a memorandum book, say 5 inches by 8 inches, with a marginal alphabet. The pages should be ruled with a narrow left hand column for the date, and a wider right hand column for the name of the house making the quotation. The space between the two columns is for the article or articles quoted.

For staple goods, such as Nails, Iron, Wire, Rope, Solder, &c., in which changes are frequent and important, it will be found convenient to divide this space into two, three or four columns for different classes of the same article, as illustrated below. For example, on page marked N write at the top "Nails," then divide the middle space in two columns. At top of first column write "Steel Cut," and at top of second write "Steel Wire."

NAILS

1890	Steel Cut	Steel Wire	
4/29	1.70		Laughlin
6/7		2.20	New Castle
6/19	1.90	2.25	Iron Age

Fig. 630.—Arrangement of Price Book

Other pages may be divided to suit the articles, many being entered promiscuously under the alphabetical heading, in each case giving date first, article second and name last. Quotations and changes from *The Iron Age* and other commercial papers may be noted in same way.

From quotations gathered by these methods and from invoices received, let a weekly change sheet be made in multiple copies sufficient to furnish each salesman with one. These should have both cost and selling price marked in characters. Thus salesmen are informed of changes in price, and at the same time of new goods constantly arriving. Now, from these change sheets let the catalogue be regularly and systematically marked. Use an erasable mark, and put down the date of the change to correspond with the date of the sheet. New lists may be pasted over old ones, or changes in lists may be made with red ink. There may not be a single new suggestion in this method, yet we claim for it the advantage of simplicity, accuracy and ease with which quotations may be referred to. It has the additional advantage that by it quotations and prices may be traced to their source, just as a book account is traced from the ledger back to the original entry.

WHEN.*

BY D. T. MALLETT.

(*Continued from page* 821.)

When you find a successful salesman, you will notice that his business knowledge is superior to that of his customers.

When you select a business friend study his failings, to avoid them. We naturally imitate evil, but the good is only attained by persistent effort.

When you find yourself jostled at the bottom of the ladder, remember that there is good breathing room at the top.

When you are told that the "American people love to be humbugged," remember that they also object to a personal knowledge of the fact.

When you allow business to unduly worry your mind, it is a sure indication that your adventure is a "size too large."

When one expects little he is seldom disappointed. Enthusiasm is the fuel of success.

When you word an advertisement, remember that the public judges your business in a measure by the method you use, therefore, avoid copying other people's ideas.

When a paid service is rendered, a pleasant "thank you" is always to your own interest.

When you seek a medium for advertising, remember that the character of the journal often colors the value of the advertiser.

When you have the abiltty and tact to cause your customer to be pleased with your goods, your prices, your clerk and yourself, you can justly consider yourself a skillful manager.

When, after years of industry, a valuable credit is obtained, remember that one false step may dissolve it in a moment.

When you are told that "a rolling stone gathers no moss," also remember that "a setting hen gathers no fat." Don't be entirely guided by old "saws."

When there has been a business depression of from three to five years, prepare for an advance.

When you are buying goods remember that politeness is then as much to your personal interest as when you are selling.

When a draft is presented for a bill which is due, do not refuse to honor it on account of pique.

When you engage an employee for a fixed term, as a year, his mind being thereby settled, his services become more reliable.

When exhibiting a line of goods offer the cheaper grades first, to avoid prejudicing the buyer's mind at the start.

When prices are inflated and speculation rife, prepare for a financial panic.

When arranging goods on a line, shelf or counter, place the smaller ones toward the door, as it is more natural to the eye of the customer.

When a customer appreciates that you understand your business, and consult his interest as well as your own, you have gained his confidence.

When your jobber adds a charge for packing to face of invoice, deduct it; there is no justness in your paying his expenses directly, even if it has the sanction of custom.

When a bill of goods is received with "allowance for freight," deduct the cash discount from the face of the bill.

When you are making a transaction with a person of a suspicious nature, avoid commending too highly the article he prefers.

When you choose a business location, embark in the vicinity of your competitors; the "droppings" of old concerns have often been the stepping stones of their successors.

When your feelings are more easily moved by unfounded criticisms than by an inner consciousness of right and duty, you are not true to your better self.

When you are making a transaction, remember that it is the commission on the buyer's ignorance which swells the profits of the seller.

When you believe others, beware; but when you rely on yourself, be honest, for it is a very mean man who will cheat himself.

When you have made a fair success along a certain line, avoid deviating from it. The avenues of success are constantly narrowing.

When you are particularly successful in your own line do not consider that as a consequence you are fitted to succeed in all lines. Remember that a great king once made a conspicuous failure as a cook.

When you are at your desk or behind your counter it is for the time your home, therefore be hospitable. A business welcome often paves the way to a business transaction.

When you wish to engage the services of a person for a responsible position, remember that it is an economical measure to secure a capable one, even if the first cost is considerably more.

When your goods consist mostly of staples, price and measure are most important; if of luxuries, style and exclusiveness.

When you are able to effect a saving in your expense account, you have practically gained the same result as if you had effected a sale in amount many times in excess of the retrenchment.

When you would make a commercial success, show a natural anxiety to sell. A business transaction, like a painting, needs feeling to make it effective.

When you would compel another to adopt your ideas, first seek to ascertain their method of reasoning.

When you have learnt by intuition the time to speak and the time to be silent, you have laid the foundation for a successful salesman.

When you are told that "honesty is the best policy" believe it, but avoid practicing honesty simply because it is policy. Real integrity needs no incentive.

When you are told that the demand regulates the supply, remember also that the novelty of the supply often creates a new demand.

When the "balance sheet" of a business shows a fair or even living profit, to "let well enough alone" is a prudent course.

When the year's result shows a net loss, the cause of which is not readily apparent, examine closely the relations of expenses to receipts, and of sales to net profits.

When you wish to secure the full advantage of a cash discount, stipulate first for long time.

When you think of an invention which you intend to patent, avoid showing it until have secured your patent. Many valuable inventions have been lost to their designers by a lack of prudence in this regard.

When a commercial traveler is particularly friendly, respond with friendship, but do not allow his smile to affect your business judgment.

When you find goods in stock which are unsalable, either from style or location, dispose of them promptly, regardless of cost.

When you ask a person for his candid advice do not preface your inquiry with an expression which conveys your own opinion.

When you would satisfy a customer with your goods allow him first to become satisfied with his own opinion of them. Keep yourself in the background as a reserve force.

When you remember that bankers and creditors are both friends to their own interests you will neither build on their offers nor complain when they decline to assist.

When you are inclined to argue with a customer, stifle the feeling. Business is not adapted to rules of debate.

When you own the exclusive sale for a desirable article put the price low and advertise it broadly.

When you write a business letter aim to be concise, exact and brief.

When you make statements in an advertisement which you do not intend to fully comply with, you may make a temporary customer, but eventually it will injure your business.

When you take advantage of cash discounts, you are indirectly paying your rent.

When a dealer is on the crest of the wave of fashion he will lead his competitors.

(To be continued.)

REVIEW OF THE WHOLESALE MARKET IN PAINTS AND OILS.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Paints and Colors.

While hardly as brisk as during the week preceding the one under review, business has been very good in nearly all branches of the trade. Favorable weather has facilitated outdoor work and thus helped along the consumption of the more staple articles in the line of house painters' materials. Goods for stock have also been taken in very fair quantities and there is a beginning on artists' materials and other specialties adapted to the holiday season trade. There have been no important movements in values or new features pointing to any decided changes in the immediate future. The fall in price of National Lead Trust certificates has, naturally, attracted more or less attention, but the downward movement is due wholly to the general depression in financial and speculative circles. The incorporation of a new "outside" competitor in the West has had no bearing, as there is no certainty as to when the projected concern will get into operation or as to the character of the pigment that may be produced.

White Lead.—Corroders have made no change in their prices, and seem to be influenced very little by the fluctuation in the cost of crude material. The lowest figures for the latter thus far reached, it is claimed, are merely on a parity with present selling prices for the pigment, and the competition of inferior Leads seems to have no greater bearing at the present time than heretofore. These cheap goods are finding very fair sale, but corroders assert that the movement of the pure pigment is fully up to the average for the season, and rather heavier, if anything, than at the corresponding period last year.

Red Lead and *Litharge* are selling to a very fair extent, but chiefly in rather small quantities. Prices remain as heretofore, with the market apparently quite firm.

Zincs.—The situation of the market for American Oxide is practically the same as was outlined last week. Orders are still being placed for good sized lots for future delivery, and the spot demand is fair, leaving manufacturers in very good position. Foreign brands are selling very fairly and remain firm at former quotations, but do not fare relatively as well as the domestic article in the current movement.

Colors, &c.—Prices for the general line of house painters' and grinders' Colors remain without important change, and the market preserves fairly good form. There is a very fair movement of supplies, yet very few transactions of other than routine character. Ready mixed Paints are moving steadily at recently revised prices.

Miscellaneous.—The arrivals of Block Chalk have been unimportant, and prices for the article are without important change. there is about the usual movement of Whiting, Paris White and Clays at steady prices.

Oils and Turpentine.

The only remarkable feature in this line has been the rather sluggish condition of business. Scarcely any movement, outside of the ordinary distribution, has taken place, and large buyers have manifested very indifferent interest. Apart from rather lower average cost of Lard and some modification of prices for Linseed, there have been no developments calculated to sway values, and even in the instances noted the changes, being moderate, have had no effect. Values have held remarkably steady, in fact, despite the quiet condition of trade.

Linseed Oil.—Western brands have been offered less freely, and not at the extreme low prices referred to last week. Anything under 59¢, as a matter of fact, is the exception at present. City brands are firmly held at former prices, and find very steady sale at about 3¢ advance on the quotation for outside makes. Substitutes seem to gain very little headway, if any.

Cottonseed Oils.—The export demand has continued disappointingly slow, and shippers are at present calling for no important quantities. The home trade demand is also moderate; rather slower than usual at this season. On prices there has been no important variation, but the market for other than stricly prime Oil is rather dull.

Lard Oil.—Crude material has ruled somewhat lower the past week, but city pressers have made no concessions in their prices for Oil and outside brands are no cheaper. The demand is only fair.

Fish Oils.—Crude Menhaden has had rather better sale and prices hold very steady. About 300 barrels Prime Light were sold at 22¢. Otherwise business has been slow, and prices for both Menhaden and Sperm products remain without change.

Other Oils.—In Cocoanut, Olive, Palm and Red Oils there has been little or no movement outside of the ordinary jobbing distribution, and prices remain without change.

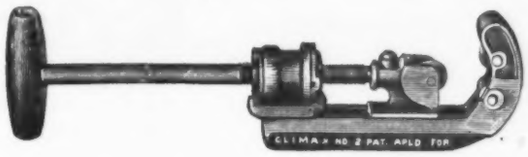
Spirits Turpentine.—The receipts here have continued liberal, keeping the surplus supply at and over 1800 barrels during the week. This circumstance, however, has no effect, except possibly to restrain the upward movement of prices. About 1¢ advance has taken place, late sales being at 41½¢ @ 42¢, as to style of package.

The Consett Iron Company are one of the most successful iron and steel making concerns in England, and their £7. 10/ shares cannot be had under £30. During the last financial year the company made a profit of £1200 per day, and could have paid a dividend of over 50 per cent., but part of their profits they devoted to buying a new colliery property, enlarging their steel works, erecting new coke ovens, &c., and still they paid the shareholders 33⅓ per cent.

The Van Dorn Iron Works, Cleveland, Ohio, send us catalogues of goods manufactured by them. These consist of Fencing, Railings, Crestings, Terminals, Stairs, Balconies, Brackets, Stable Fittings, Weather Vanes, Lawn Seats and Vases. They also make Structural Iron Work, Iron and Steel Jail Work, Vault Doors and Shutters. Attention is called to the Cleveland Wrought Iron Fence (Van Dorn's patent), of which they are the sole makers. These fences are shown in a variety of designs, and are guaranteed by the manufacturers against breakage.

Climax Rapid Moving Pipe Cutter.

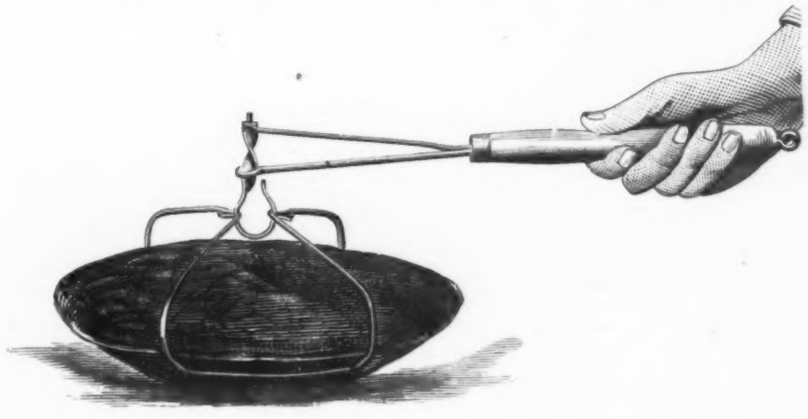
Clarence M. Kemp, Baltimore, Md., is introducing a pipe cutter, as illustrated herewith. It is described as being strong, quick operating, true cutting, and changes instantly from large to small and *vice versa*. The point is made that no revolution of the screw is required except when the cutter is on the pipe, and such revolution is only for the purpose of pressing the cutter wheels into the pipe. The pipe cutter is operated quickly up and down by means of the nut (made in two parts) opening and closing. It is stated that strain on the wrist, caused in other cutters by revolving the screw, is entirely banished. The cutter is made in two styles, with three cutter wheels or with two cutter wheels, and one roller wheel to mash the burr, thereby removing objections to three wheel cutters. No. 1 of either style cuts from ¼ to 2 inch pipe and weighs 4½ pounds.



Climax Rapid Moving Pipe Cutter.

Locke's Automatic Pie Turner and Lifter.

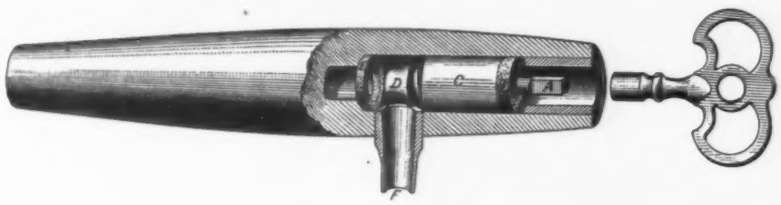
W. E. Thomas & Co., 30 Hanover street, Boston, Mass., are introducing an Automatic Pie Turner and Lifter, as shown in the accompanying illustration. The object of the device is for lifting pies in and out of the oven, also to turn pies just half way around in the oven. It is referred to as avoiding trouble with cloths, burning of arms, hands, or dropping pies on the floor. The wire jaws are put around the pie plate, when the weight of the pie when lifted causes it to turn, on account of the ingenious spiral attached to the handle.



Locke's Automatic Pie Turner and Lifter.

Warner's Loose Key Faucet.

H. A. & A. H. Warner, Bristol, Conn., are introducing a lock faucet, as illustrated herewith. Part of the wood has been cut away so a better understanding of the working parts may be had. In making the faucet a $\frac{7}{16}$-inch hole is drilled through the entire length of the prepared piece of hard maple wood, after which a ¾-inch hole is sunk in the large end $\frac{3}{16}$ inch below the discharge spout F. Into the ¾-inch hole the leather washer E is forced, with a hole corresponding with the $\frac{7}{16}$-inch hole in the faucet. The metal nut C, 1¼ inches long, is then fastened in the ¾-inch hole at a suitable distance from the end of the faucet. An iron screw, on one end of which is the metal plug D, the other end being the square shoulder A, is introduced into the nut C, which has a corresponding thread. The plug D is turned to fit the hole in the washer E. The leather washer B is placed between the nut C and A wooden quill an inch long, to prevent any back flow of the liquid. By turning the key the tapered plug D is forced into the leather washer E, which forms a yielding seat, the result being referred to as a perfect joint, which will not leak. The point is made that the hole in the wooden quill being only large enough to receive the key, and the shank being so far from the end, the faucet cannot be opened with plyers or other tools. The manufacturers claim this makes it a perfect lock faucet, the metal key being removed when the liquid is not being drawn.



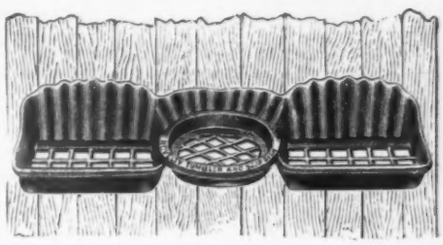
Warner's Loose Key Faucet.

The Troy Nickel Works, Troy, N. Y., call attention to their new Alaska knob, and state that in using this the difficulty heretofore experienced in fastening a knob is avoided. The coil wire is described as serving three purposes. One is to hold the knob always in position. The second is that it allows a circulation of air, which will always keep it cool while in use, and the combination does away with nuts and bolts. They advise us that they are very busy, with the prospect that trade will continue good until late this season. They are running full capacity, and at present cannot keep up with orders.

The corner stone was laid of the great Masonic Building in Chicago, to be fire proof and cost $2,000,000.

Novelty Soap Cup.

Silver & Co., 56 Warren street, are introducing a soap cup, as illustrated herewith. It is fastened against the wall, and provides holders for toilet and laundry soap; also for a cup or tumbler.



Novelty Soap Cup.

The Champion Egg Opener.

The Champion Egg Opener Company, 88 and 90 Wells street, Hartford, Conn., have improved their egg opener, illustrations of which were given in *The Iron Age* some time ago. The improvement consists in the shape of the handles, which are now made loop shape, as shown in Fig. 1, instead of straight, as formerly. The application of the opener is shown in Fig. 2. This opener is designed particularly for use at the table, to obviate the unpleasant results that accompany opening soft boiled eggs with a knife or spoon, and also for use in the kitchen.

Fig. 1.—Champion Egg Opener.

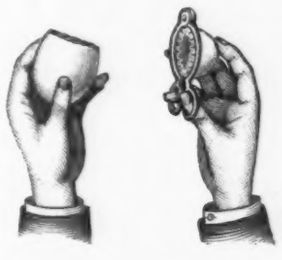


Fig. 2.—The Application of the Champion Egg Opener.

The Bundy Automatic Time Recorder.

The Bundy Mfg. Company, Binghamton, N. Y., are manufacturing the Bundy Workman's Automatic Time Recorder, as illustrated herewith. The manner of registering is alluded to as being very simple, and is described as follows:

Each workman is given a number, and when he goes to work he takes his key from the key board, inserts it in the keyhole of the recorder, turns it half way around, takes it out and passes in to his work. This action records upon the paper ribbon within the machine the number of his key and the exact time of day to the minute. If it is desired to register out, the workman holds down the lever on the outside of the recorder while registering, which prints a star in front of the record. Fig. 1 shows the working parts, the rod C connecting the minute wheel of the clock by a simple bevel gear to the minute type wheel. The hour wheel by means of a little pin is thrown ahead one number each revolution of the minute wheel, so it can be readily seen that the time printed must correspond with the time shown by the clock. The keys have two functions. One tongue trips the hammer, which is not released, however, until the other tongue, by means of step cams, geared to type wheels, has thrown the necessary number in front of the hammer, so that when the hammer falls it must print not only the time as shown by the clock, but the number of the key used. The paper, of course, is spaced with each blow of the hammer, and with every sixth blow of the hammer the ink ribbon moves ahead one notch, so the print is always fresh and clear.

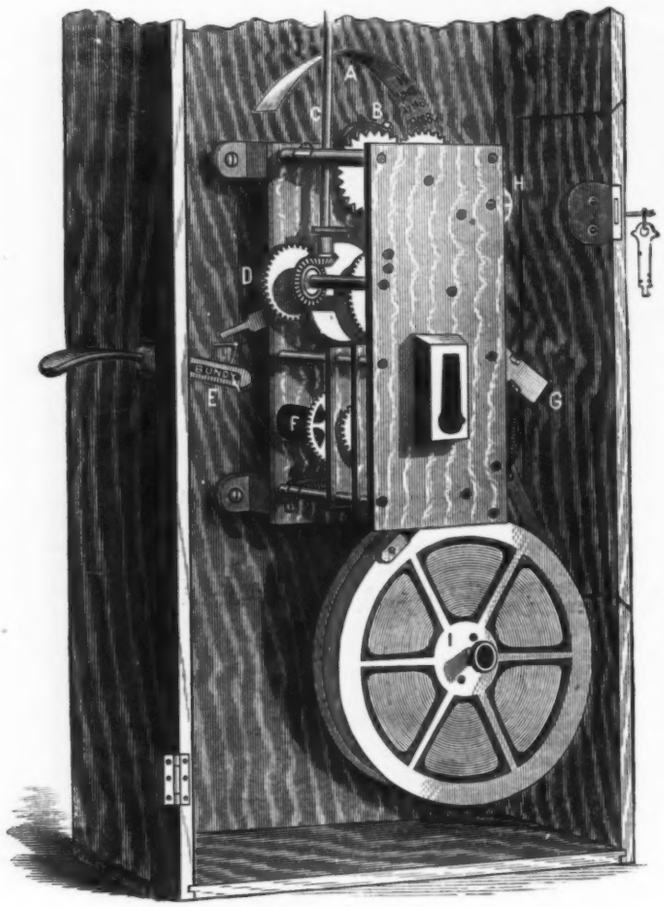


Fig. 1.—Construction of the Recorder.

It is stated that 100 men can easily register inside of five minutes. Fig. 2 shows the appearance of the clock containing the recorder hung on the wall ready for registering. Fig. 3 illustrates a piece of the paper ribbon as it appears printed when removed from the recorder. From this slip it would appear that No. 21 registered at between 47 and 48 minutes past 6 o'clock; No. 75 at 6.53 o'clock; No. 28 at 6.56 o'clock, and No. 4 at 7.02 o'clock; No. 56 went out at 10.30 o'clock; No. 18 at between 2 and 3 minutes past 12 o'clock, and so on through each number possibility for them to get out of order, but should one do so, the first man attempting to register must find it out by having his key locked in, and could report the fact at once.

The Norwalk Lock Company, South Norwalk, Conn., and 82 Chambers street, New York, issue an 1890 illustrated catalogue. This is 11 x 14 inches, containing over 375 pages, and devoted to Locks and Builders' Hardware. The Norwalk Lock Company are well known to the Hardware trade of the country, and the illustrations given thoroughly sustain the reputation the company have for goods of sterling worth and artistic design. In a separate pamphlet they present Bronze Hardware of Italian Renaissance design. This is shown in Mortise Locks and Bolts, Sliding Door Locks, Escutcheons and Roses, Electric Bell Pushes, Butts, Push and Finger Plates, Drawer Pulls, &c.

The Rochester Stamping Works, Rochester, N. Y., send out leaflets directing attention to some of their specialties. One of the cards refers to the Rochester Range Kettle, and briefly notes its several advantages, besides presenting a price-list of the polished copper Kettle and the nickel plated copper Kettle. Another card draws attention in a similar way to

Fig. 2.—Clock with Time Recorder in Place.

the Rochester Covered Sauce Pot. This company, we understand, are doing more than double the business in their sheet metal specialties this year than in any previous season. The demand, furthermore,

VI 47/8	21
VI 52/53	75
VI 56/7	28
VII 1/2	4
★X 30/1	56
★XII 2/3	18
★XII 3/4	97
★XII 55/56	51
XII 56/57	35
XII 57/58	45
XII 58/59	43
★V 1/2	62
★VI 3/4	84
★VI 7/8	96

Fig. 3.—Paper Ribbon as Taken from the Recorder.

is general, coming from all parts of the country, and the works of the company are kept running to their full capacity to supply it.

Electric Brand Razor.

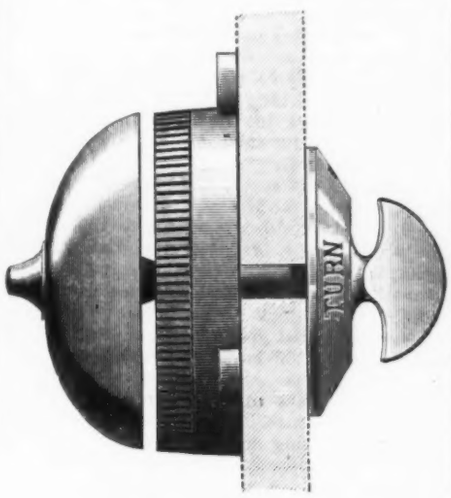
The Electric Cutlery Co., 91 Chambers street, New York, and Newark, N. J., are manufacturing a razor of the Electric brand, as illustrated herewith. This razor is described as made of the best Wardlow steel, highly finished, and is placed on the market to compete with the finest goods.

Electric Brand Razor.

They are made both square and round point, white, antique and cracked antique handles, old silver pattern.

New Improved Door Bell.

The Hardware Specialty Company, 61 and 63 Mulberry street, Newark, N. J., manufacturers of novelties, are putting on the market the new improved door bell illustrated herewith. The bell is referred to as simple in construction, and is rung by turning the key bar. The sound is produced by the striking on the gong of two hammers attached to the ends of two arms, to which is imparted a vibrating motion, resulting from turning the key bar. It is stated that the key bar is very sensitive, cannot be turned without ringing the bell, and that for one half turn the gong will be struck 30 to 50 times. As long as the bar is being turned the bell will continue to ring. The bell has no springs and requires no winding, and boring a very small hole in the door is all the labor necessary in putting it in position. The ringing is alluded to as being an exact reproduction of the sound of an electric bell, only louder and more distinct.

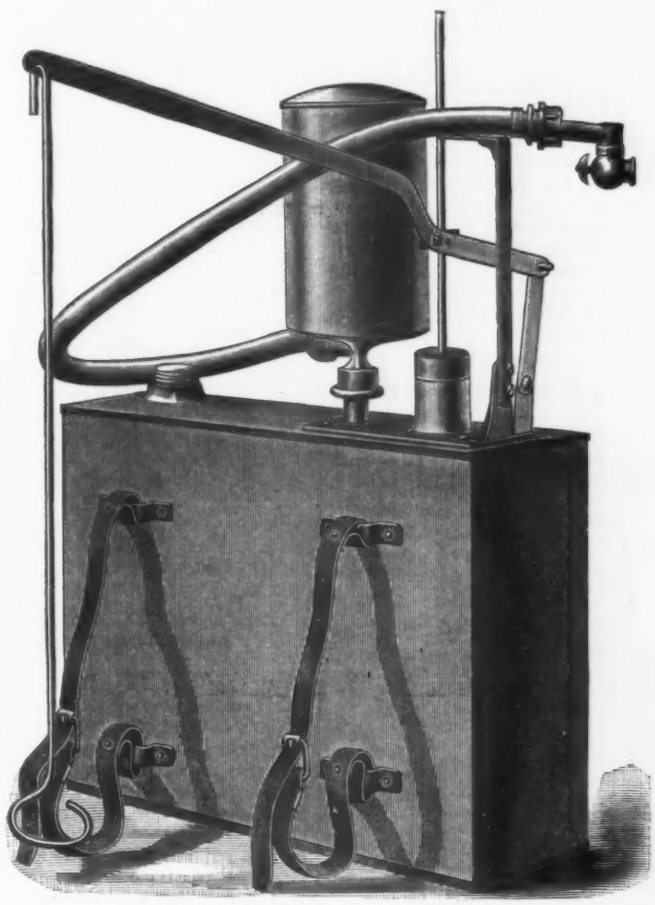


New Improved Door Bell.

George E. Weaver, Providence, R. I., issues a circular and price-list illustrating the Standard Barrel Truck manufactured by him. The Barrel Trucks are made in three sizes, Nos. 1, 2 and 3, while No. 4 is intended for Hogsheads. They are designed either to move Barrels as desired, or to have them remain permanently on the Truck.

The New Knapsack Sprayer.

The Field Force Pump Company, Lockport, N. Y., are introducing a knapsack sprayer, as illustrated herewith. The tank is made entirely of copper, and holds 6 gallons; it is furnished with two leather straps to carry easily upon the back, and, when filled with liquid, weighs about 52 pounds. The pump is made entirely of brass and copper; it consists of drawn brass tubing 1¼ inch diameter, in which the plunger works, driving the water on the downward stroke through a brass tube ¼ inch in diameter, which is attached by means of an elbow, also of brass, to the lower end of the larger tube; this smaller tube passes through the tank parallel with the larger tube; at the top of the reservoir it is attached to the air chamber by means of a screw connection, so the air chamber can be easily removed. To the air chamber is attached the discharge hose, which is fitted with the Vermorel nozzle. The lower valve of this pump is made entirely of copper and brass, without leather or rubber packing, the only leather used being a small ring in the plunger valve. There is also a ball valve used in the air chamber, and when by the downward stroke of the pump the water is driven through the smaller tube it meets the compressed air in the air chamber, and is driven through the discharge hose and nozzle with great force, and by the use of the Vermorel nozzle the finest misty spray is produced. The large capacity of the air chamber holds in reserve sufficient power to keep up the pressure and continue to discharge the spray for fully one minute after the operator stops pumping. The entire pump is securely soldered to a brass plate, which is fastened to the top of the tank by brass screws. When it becomes necessary to remove the pump from the tank it can be easily done by loosening the screws, when the pump can be lifted out of the reservoir. The machine is especially designed for the treatment of fungus diseases on trees, vines and plants, and will be found a valuable adjunct in nurseries and vineyards. The price of this sprayer is $14.



The New Knapsack Sprayer.

Poloette.

D. F. Mallett, 776 Chapel street, New Haven, Conn., hardware merchant, has invented and is introducing Poloette, or Parlor Polo, a new parlor game. Poloette is described as combining the excitement of polo with the science of billiards, while the elements of chance and skill are so blended that it is equally enjoyed by both sexes and all ages. Poloette consists of a finely finished Poloette table, covered with green felt, and each end provided with a "cage" or pocket. The size of the Poloette table is about 30 inches long by 10 inches wide, and supported upon rubber shod feet. The implements in-

clude four Poloette sticks, about 8 inches long and crooked at the end; four Poloette balls and one striking ball. The price of the entire outfit of Poloette is $2.50.

Hull's Bit Stop.

T. G. Hull, Plainville, Conn., is introducing a bit stop, as illustrated herewith. The construction is shown so plainly in the cut that no detailed description is necessary. In the use of the gauge the smallest fraction of an inch is shown in the depth of the hole bored. Where the stop comes in contact with the wood in boring a leather washer is provided to prevent marring the work. Any sized bit or gimlet bit can be used, and the stop being scaled, saves the trouble of using a rule to measure when altering the depth of hole to be bored.

Hull's Bit Stop.

Tatum's Fancy Letter Box.

Samuel C. Tatum & Co., Cincinnati, Ohio, are introducing a letter box, as illustrated herewith. It is 11½ inches long, 6½ inches wide and 2½ inches deep. A mail holder, for matter awaiting the postman's call, is attached to the top. The door fastens with a spring tumbler lock, fastened on the inside. There is a provision to prevent mail matter being picked from the box. The sight hole at the bottom has a piece of beveled glass covering it. The screws which fasten the box in position are covered inside the locked door. The back of the box is solid cast iron, having, however, a suitable opening for using the box upon the inside of house or office door, if desired. The box is referred to as being pleasing in appearance, made from new and original designs and of ample capacity.

Tatum's Fancy Letter Box.

The Calorific Ventilating Street Car Heaters.

The Calorific Ventilating Heater Company, 79 Kinzie street, Chicago, Ill., are manufacturing the Calorific Ventilating Street Car Heaters, two styles of which are shown in the accompanying illustrations. The advantages claimed for these heaters are small space occupied, neatness and economy in working. A most important feature, also, is that they provide ventilation. The magazine or fire pot is inclosed in a cast iron jacket and sets in the floor of the street car under the seat, and an air space is provided so that the heater proper does not come in contact with any of the woodwork of the car. It is pointed out, furthermore, that it is impossible for passengers or their clothing to come in contact with it. The fuel is hard coal, stove size, and the heater is said to consume very little coal, besides requiring but little attention. By referring to the cuts it will be noticed that the heater draws its supply of air from outside the car. This constant current of fresh air is heated in its passage through the calorific ventilating device and is discharged within the car, and so distributed, it is claimed, as to insure ventilation and a pure, wholesome atmosphere. By means of the circulation of air the passengers next to the heater are not overheated and the temperature throughout the car is kept uniform. In Fig. 1 style A is shown, the vertical pipe in this style rising through the car seat; in style B, by means of the offset, the pipe comes in the car aisle next to the seat. Both styles of the heater are made in two sizes, adapted to 16 and 21 foot cars. The officers of the Calorific Ventilating Company are Garson Meyers, president and general manager; C. C. Baxter, secretary and treasurer, and A. B. Baxter, superintendent. We understand that the goods are to be manufactured at Mansfield, Ohio, but that the business will all be transacted in Chicago.

The Calorific Ventilating Street Car Heaters.—Fig. 1.—Style A.

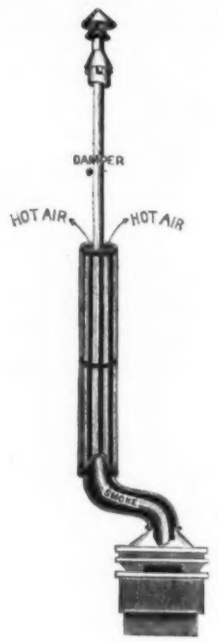


Fig. 2.—Style B.

A Fine Factory.

Wells Bros. & Co., Greenfield, Mass., manufacturers of the Little Giant Screw Plate, machinists' and blacksmiths' tools and machines, are now occupying their factory, recently completed. The building is 200 feet long and 100 feet wide, and 14 feet high in the center. It is of slow burning construction, the prevention from fire depending on the entire absence of concealed air space. The foundations are of stone, the walls of brick up to the level of the windows, and above this to the roof largely of glass, the windows being as thickly set as possible. It has a gravel roof nearly flat, with six large skylights of thick ribbed glass. The offices are located in the north end of the building. A 50 horse-power engine of the Corliss type supplies the power for three main lines of shafting, with four intermediate lines. The boiler room is a separate building 32 by 48 feet, fitted with a 100 horse-power boiler of the Hazleton make, commonly known as the "Porcupine" boiler. This stands in a circular brick shaft 22 feet high. The boiler room also contains closets and sinks for the use of the operators. Artificial heat is furnished by the exhaust steam; a large blower run by a separate engine drives the fresh air over the pipes into a brick and cement duct which runs under the floor, from which the heated air enters the room in side registers 2 feet from the floor. Fresh air can be supplied from the transoms over the side windows; it is stated that when heat is required it is possible to completely change the air of the room in 15 minutes' time. An interesting feature in the arrangement of the buildings is referred to as being the thoroughness with which the concern has provided for the comfort and convenience of its workmen, as well as for the carrying on of its business.

NEW PUBLICATIONS.

THE ENGINEER'S SKETCH BOOK. By Thomas Walter Barber. Published by E. & F. N. Spon, London and New York. $3.

During an experience of 25 years in the designing of machinery the author collected notes and sketches, which, amplified and classified, are now presented in book form. The work consists of sketches upon one page and titles, and, when necessary, a line or two of explanation, upon the opposite page. Almost every branch of mechanical engineering is illustrated, and some of the most important machines are presented in complete shape and in detail. The book will serve to convey a general idea of mechanical devices and arrangements now employed. Its scope may be imagined from the fact that there are 1936 illustrations. The value of the work would have been enhanced if it had been provided with an index and if in many cases the descriptions had been more extended.

DEVELOPMENT OF TRANSPORTATION SYSTEMS IN THE UNITED STATES. With illustrations of hundreds of typical objects. By J. L. Ringwalt, editor of the *Railway World*, Philadelphia. Large quarto; pp. 400; cloth.

Roads are the signs of the progress of civilization. The methods of transportation, from the dugout and birch bark canoe to the Pullman car, with its locomotive, and the ocean steamship, have always been good gauges of man's attainment of power over natural forces. This generation has welcomed the electric motor and as the steam engine made possible the crossing of the American continent in five days, of the Atlantic Ocean in less than six and a trip around the world in 60 days, it is now seriously announced that transportation by the air ship in half the time of the greatest speed hitherto attained on land is now made probable by electricity within the present year, and millions of money have been devoted to its achievement. This large volume contains some of the most practical and reliable information which a large railway journal, ably conducted, could profitably gather in a few years. The extent and variety and importance of the facts here offered to the public, which are known mostly to engineers, are very remarkable to the unprofessional reader.

This book compasses the thousand ways of human travel and commercial freighting in interesting sketches, scientific investigations and explanations and topographical illustrations. Its tabulated information is copious and much of it very valuable. The history of civilization in its most active movements stands out in bold lines. The book is rather cyclopedic, but yet as readable as a monthly magazine, for its contents address many readers of varied tastes and pursuits, historic, commercial and professional, and especially those working in the lines of civil engineering. Its 48 full page illustrations will attract a youth and make thoughtful a man of business enterprise and skill. It has a right to be in libraries and offices, though it is unwieldy for general use. But its information has already gone out in many directions in journalistic columns, and is now gathered up by a discriminating hand for many further uses, at a time when steam and railway transportation over the thoroughfares of continents and the ocean highways are reaching the maturity of their development.

HOWSON & HOWSON PATENTS. 12mo, pp. 86, 1890. Geo. H. Buchanan & Co., Philadelphia.

This is a formal circular by these well-known attorneys at law and solicitors of patents, with offices in New York, Philadelphia and Washington, D C. It gives in concise and intelligible language the information that one seeking for a patent for his invention needs to direct his uncertain steps in the Interior Office and to throw light on the mysterious ways of Patent Office officials. The points of law most involved are clearly made, and the manual will prove of service from the large experience which has suggested it.

THE TOURIST'S GUIDE THROUGH THE HAWAIIAN ISLANDS. Honolulu. The Hawaiian Gazette Company. Small octavo. Illustrated. 176 pages; paper cover; 1890. 60 cents; by post 75 cents. American News Company, New York.

This guide book describes scenes in the remote and unfamiliar islands of the Pacific, and has on that account an advantage over the usual publications of this kind. It shows the attractions of a new resort for travelers and invalids, where they can find perpetual May in a tropical climate, varied by altitudes within the range of 10,000 feet. The five principal islands of Hawaii—which are Hawarii, Oahu, Maui, Kaui and Molokai, and numerous smaller islands are variously presented in the features which a rich tropical vegetation, picturesque harbors, coral reefs and lagoons, marvelous volcanoes, extinct and active, and majestic mountains can offer beneath a balmy air and soft blue sky. The effusions of enthusiastic tourists in prose and verse and the sober facts which scientists and geographers have gathered are interspersed with the history of the islands and the descriptions of the palace and institutions of royalty which here hold sway over a region far more fruitful and beautiful than some of the smaller European kingdoms. The wonders of these most remarkable volcanic regions in the world have exhausted the powers of language of such a well known traveler as Miss Isabella Bird, whose "Untrodden Paths in Japan," some years ago gave us remarkable interior views of that interesting and strange country. The greatest sugar plantation and manufactory in the world, belonging to Claus Spreckels, are well described for commercial readers. The successful application of irrigation methods on a grand scale, where great natural difficulties have been overcome by courageous enterprise, will confirm the projects of those who are developing by irrigation the immense fields of the Southwest.

There is a very poor arrangement of material in this volume. There is much repetition of statement, and facts are jumbled together where they might have been intelligently sifted and more forcibly presented. The illustrations are good. The trips among these islands are outlined in a way to promise those hungry for new sensations in travel something within moderate means. It costs but $125 for a voyage from San Francisco and return in a first-class steamship.

THE METAL WORKER'S HANDY BOOK OF RECEIPTS AND PROCESSES. Edited from various sources by William T. Brannt. Illustrated by 63 engravings. Philadelphia: Henry Carey, Baird & Co. London: Sampson, Low, Marston, Searle & Rivington. Cloth, pp. 538. Price, $2.50, post free.

This collection of chemical formulas and manipulations for the working of all the metals and alloys, with the decorations of the products, meets the wants of the metal worker. It is impossible otherwise to utilize the many suggestions and rules which the diverse experience of practical workers has scattered in books and journals. Some one must collect and arrange this material, and it has been apparently well done in this book. It is not stated, however, that any one of these receipts has been tried by the author, or within his personal observation. Consequently the uncertainty of experiment under these directions is often increased by the absence of responsible authority to give confidence to the deductions. The book is worthy of trial, however, from the effort, which has been evidently honest and faithful, to meet the needs of workmen. The illustrations are very few and of little account compared with the opportunity which was offered to make clear thereby the processes and machinery to be used.

CONTENTS.

CURRENT HARDWARE PRICES.

NOVEMBER 12, 1890.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

Adjusters, Blind.
Domestic.....₱ doz $3.00, 33⅓%
Excelsior.....₱ doz $10.00.....50&10&2%
Washburn's Self-Locking.....20@20&10%

Ammunition.—
Caps, Percussion, ₱ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....34@35¢
E. B. Trimmed Edge, 1-10's.....46@48¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....46@47¢
Musket Waterproof, 1-10's.....50¢
G. D.....28¢
S. B. Genuine Imported.....45¢
Eley's E. B.....54¢ @ 55¢
Eley's D Waterproof, Central Fire...$1.60
Cartridges—
Rim Fire Cartridges.....50&5&2 %
Rim Fire Military.....15&2 %
Cent. Fire, Pistol and Rifle.....25&5&2 %
Cent. Fire, Military and Sporting 15&5&2 %
Blank Cartridges, except 22 and 32 cal., additional 10 % on above discounts.
Blank Cartridges, 22 cal., $1.75.....2 %
Blank Cartridges, 32 cal., $3.50.....2 %
Primed Shells and Bullets.....15&5&2 %
B. B. Caps, Round Ball, $1.75.....2 %
B. B. Caps, Con. Ball, Swgd., $2.00.....2%
Primers—
Berdan Primers, $1.00.....2%
B. L. Caps (for Sturtevant Shells) $1.00, 2%
All other Primers, $1.20.....2%
Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Prize.....40&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Seibold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%
Shells Loaded—
Standard List, July 19, 1890..40&10&5%
Wads—Price per M.
U.M.C.&W. R. A.—B. E., 11 up.. 68¢
U.M.C.&W. R. A.—B. E., 9&10.. 82¢
U.M.C.&W. R. A.—B. E., 8..... 96¢
U.M.C.&W.R.A.—B. E., 7.....$1.10
U.M.C.&W. R. A.—P. E., 11 up.. 1.15
U.M.C.&W. R. A.—P. E., 9&10.. 1.50
U.M.C.&W. R. A.—P. E., 8..... 1.70
U.M.C.&W.R.A.—P. E., 7..... 1.80
Dis.20&2
Eley's B. E., 11 up.....$1.75
Eley's P. E., 11@20..... 2.80

Anvils.—
Eagle Anvils, ₱ ℔ 10¢.....15@15&5%
Peter Wright's..... 11½¢
Armitage's Mouse Hole.....10½@11¢
Armitage's Mouse Hole, Extra...12@12½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co.....33⅓%
Anvil Vise and Drill—
Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%
Star.....45&5%

Apple Parers—See Parers, Apple, &c.

Augers and Bits—
Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co.
French, Swift & Co. (F. H. Beecher,
P. S. & W. Co.
Rockford Bit Company.
Cook's, Douglass Mfg. Co.....55 %
Cook's, N. H. Copper Co.50&10&50&10&5%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₱ set, 32½ quarters, No. 5, $5; No. 30, $3.50.20%
Lewis' Patent Single Twist.....45%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits.....60@60&5%
Snell's Jennings Pattern.....60%
Pugh's Black.....20%
Rockford, Jenning's Pattern.....60%
Car Bits.....60@60&10%
Car Bits, P. S. & W. Co.....60&10%
Snell's Car Bits.....60%
L Hommodieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....20%
Cincinnati Bell-Hangers' Bits....30&10%
70&10%
Bit Stock Drills—
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Williams' or Holt's, for metal.50&10&10%
Williams' or Holt's, for wood...40&10%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%
Expansive Bits—
Clarks' small, $18; large, $26 ".35@35&5%
Ives' No. 4, ₱ doz $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%
Gimlet Bits—
Common.....₱ gross $2.75@$3.25
Diamond.....₱ doz $1.10.....25&10%
Bee.....25@25&5%
Double Cut, Shepardson's.....45@47&10%
Double Cut, Ct. Valley Mfg. Co...30&10%
Double Cut, Hartwell's, ₱ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&10%
Hollow Augers—
Ives
French, Swift & Co.
Douglass'
33⅓ @ 33⅓&10%
Bonney's Adjustable, ₱ doz $48....40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%
Ship Augers and Bits—
L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits. 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls, Brad Sets, &c—
Awls, Sewing, Common ₱ gr $1.70, 35%
Awls, Should. Peg.₱ gr $2.45, 40@40&10%
Awls, Pat. Peg...₱ gr 63¢.....40@40&10%
Awls, Shouldered Brad..2.70 ₱ gr.....35%
Awls, Handled Brad...$7.50 ₱ gr.....45%
Awls, Handled Scratch ₱ gr, $7.50.35&10%
Awls, Socket Scratch. ₱ doz, $1.50.25@30%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality	$8.00	$8.50
Others	7.50	8.0(

Axle Grease—See Grease, Axle.

Axles—
No. 1, 4¼@5¢, No. 2 5½@6¼¢
Nos. 7 to 14.....55&5%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
3 % cash
Concord Axles, loose collar.....5¢@6¢
Concord Axles, solid collar.....6¢@7¢
National Tubular Self-Oiling..... 33⅓%@33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—
Spring Balances.....40%

No.	2000	20	30
Chatillon, ₱ doz	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Bars.
Crow—
Cast Steel.....₱ ℔ 4¼¢
Iron, Steel Points.....₱ ℔ 3½¢

Basins, Wash—
Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—
Scale Beams, List Jan. 12, '82...50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—
Egg—
Dover.....₱ doz $1.50
Duplex (Standard Co.).....₱ doz $1.25
Rival (Standard Co.).....₱ doz $1.00
Duplex Extra Heavy (Standard Co.)... ₱ doz $3.60
Bryant's.....₱ gro $14.00
Double (H. & R. Mfg. Co.), ₱ gro. No. 0, $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₱ gro $12.00
Triple (H. & R. Mfg. Co.).....₱ gro $16.50
Spiral (H. & R. Mfg. Co.).....₱ gro $4.50
Improved Acme (H. & R. Mfg. Co.)..... ₱ gro $9.00
Paine, Diehl & Co.'s.....₱ gro $24.00
Silver & Co.....₱ doz $5.50
Culinary—
Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....20 %

Bells—
Cow—
Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Dodge, Genuine Kentucky.....70@70&10%
Texas Star.....50&10@50&10&5%
Call.....40@40&5%
Farm Bells.....₱ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%
Door—
Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Pull, Western.....25&10%
Electric,
Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's.....20%
Hand—
Light Brass.....75&10%
Extra Heavy.....65&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe(Cone's Patent).....25&10@35%

Bellows—
Blacksmiths'.....60&5@65%
Molders'.....40@40&10%
Hand Bellows.....40&10@50%

Belting, Rubber—
Common Standard.....70@70&5%
Standard.....60&10&10@70%
Extra.....50&10@60%
N.Y.B.&P.Co., Carbon...50&5@50&10&5%
N.Y.B.&P.Co., Diamond....40&5@40&10%

Bench Stops—See Stops, Bench.

Benders, Upsetters, Tire.
Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Bits—
Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.
Bit Holders—See Holders.
Blind Adjusters—See Adjusters, Blind.
Blind Fasteners—See Fasteners, Blind.
Blind Staples—See Staples, Blind.
Blocks—
Ordinary Tackle, list May 20, 1889... See Trade Report.
Cleveland Block Co., Mal. Iron.....50%
Moore's Novelty, Mal. Iron.....50%

Boards, Stove.
Wood Lined "Crystal".....50%
"Embossed".....50%
"Oxidized".....45%
Paper Lined Zinc.....55%
"Crystal".....55%
"Embossed".....55%
"Oxidized".....45%

Bolts—
Carriage, Machine, &c.—
Com. list June 10, '84.....70&10&5&2%
Genuine Eagle, list Oct., '84...75&10@80%
Phila. pattern, list Oct. 7, '84..80@80&10%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890..... 75&10@75&10&5%
Bolt Ends, list Jan. 1, 1890..... 75&10@75&10&5%
Door and Shutter—
Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts.....60%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's...60&10%
Wr't Shutter, Brass Knob, " ..40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list...55&10%
Wr't Sunk Flush, Stanley's list...50&10%
Wr't B.K.Flush. Com'n " ...55&10%
Stove and Plow—
Stove.....60%
Plow.....60&5%
R. B. & W., Plow.....55%
Tire—
Common, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire. list Feb 28, '83.....65%
Keystone, Philadel., list Oct. '84....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R.B.&W., Philadel., list Oct. 16, '84....80%

Borers, Tap.
Common and Rind.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....30&10@30%
Clark's.....33⅓@35%
Borax.....₱ ℔ 9½@10½¢
Boring Machines—See Machines, Boring.
Bow Pins—See Pins, Bow.
Boxes, Wagon.
Per ℔.....2½¢

Braces.—
American Bit Brace Co.:
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5%
Ball Braces, net.....$1.12 to $1.25¢
Amidon's
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10 ;10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber's,
Nos. 10 to 16.....50%
Nos. 30 to 33.....50%
Nos. 40 to 63.....50&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's..50&5&50&10%
Fray's No. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....50&5@60&10%
Osgood's Ratchet.....40&10@50%
P. S. & W. Co., Peck's Patent.....60%
Brackets—
Shelf plain, Sargent's list, 55&10@55&10&10%
Shelf, fancy, Sargent s list, 60&10@60&10&10%
Reading, plain.....50&10@60&10&5%
Reading, Rosette.....60&10@60&10&10%
Bright Wire Goods—See Wire.
Broilers—

Henis' Self-Basting.	Inch.....	9	10	9x11
	Per doz...	$4.50	5.50	6.50

New Haven.....50%

Buckets, Well.
Galvanized—
Hill's.....₱ doz, 12 qt, $4.25; 14 qt, $5.25
Iron Clad.....₱ doz. 14 qt, $4.25@$4.50
Helwig's Flat Iron Band.....$4.25@4.50
Helwig's Wired Top....₱ doz $4.00@4.25

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers Butchers'.

Butts—
Brass—
Wrought Brass.....75&10@80%
Cast Brass, Tiebout's'.....50%
Cast Brass, Corbin's, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%
Cast Iron—
Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts.....
Mayer's Hinges.....
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.....
70&10 @7½
Wrought Steel—
Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad.....
Table Butts, Back Flaps, &c .....
Inside Blind, Regular.....
Inside Blind, Light.....
Loose Pin.....
70&10 @75%
Bronzed Wrought Butts..... 50

Calipers—See Compasses.

Calks, Toe—
Gautier.....₱ ℔ 5½@6¢
Dewicks (Burke).....₱ ℔ 5½@6¢

Can Openers—See Openers, Can.

Cards—
Horse & Curry.....10&10&10&10%
Cotton.....10&10&10%
Wool.....10&10&10%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sw Carpet.

Cartridges—See Ammunition.

Casters—
Bed..... Brass....55@55&10%
Plate..... Others...60@60&10%
Shallow Socket.....
Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10@40%
Yale, Gem.....60@60&5%
Martin's Patent (Phœnix).....45&10@50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%

Cattle Leaders—See Leaders, Cattle.

Chain—
Trace, Wagon and Fancy Chains, List revised April 21, 1890.....50& 10@60%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.75	5.45	4.55	4.00	3.65	3.50	3.40	3.30

Less than cask lots, add ¼@¼¢ ℔.
German Coil, list Oct. 6, 1890 50&10&5@60%
German Halter Chain, list Oct. 6, 1890 50&10&5@60%
Covert Halter.....60&2%
Covert Traces.....35@2%
Covert Heel Chain.....50&2%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₱ ℔ 5½@6¢
Jack Chain, Iron.....75&10@80%
Jack Chain, Brass.....75@75&10%

Chalk—
White.....₱ gr 50¢
Red.....₱ gr 70¢
Blue.....₱ gr 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—
Socket Framing and Firmer.
P. S. & W.
New Haven
Witherby.
Mix
Ohio Tool Co.
.75 @ 75&10
Douglass.....75@75&5%
Buck Bros.....30%
Merrill.....60&10@60&10&5%
L. & I. J. White.....50@50&5%
Tanged and Miscellaneous.
Tanged Firmers.....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to $
Buck Bros.....30%
Cold Chisels, ₱ ℔.....15@16¢

Chucks—

Beach Pat.....each, $8.00.....20%
Morse's Adjustable,each, $7.00, 20@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Bals Pat.....25%
Skinner's Patent Chucks.
Combination Lathe Chucks.....33⅓%
Universal Lathe Chucks.....40%
Independent Lathe Chucks.....40%
Drill Chucks.....15%
Union Mfg. Co.,
Victor.....$8.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

Churns.

Tiffin Union No. 1, 5 gallon...$3.25 each
Tiffin Union No. 2, 7 gallon...$3.75 each
Tiffin Union No. 3, 10 gallon...$4.25 each

Clamps—

R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....25&10%

Cleavers.

Butchers'.

Bradley's.....25@30%
L. & J. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—

Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16 65&5%
Superior Axle Clips.....60%&5&70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₩ lb, 5¢
Steel Felloe Clips..... ₩ lb, 6¢
Baker Axle Clips.....25%

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.

Hardware list.....50&2%

Coffee Mills—See Mills, Coffee.

Collars, Dog, &c.

Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company.....50&10@60%

Combs, Curry.

Fitch's.....50&10@50&10&10%
Rubber, per doz $10.00.....20%
Perfect.....50%

Compasses, Dividers, &c.—

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers.....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

Coopers' Tools—See Tools, Coopers'.

Cord, Sash—

Common.....₩ lb 10@11¢
Patent, good quality.....₩ lb 13@13½¢
White Cotton Braided, fair..₩ lb 28@29¢
Common Russia Sash.....₩ lb 13½¢
Patent " " .....₩ lb 15¢
Cable Laid Italian Sash.....₩ lb 22@23¢
Indian Cable Laid " ... .₩ lb 13¢
Silver Lake—
A Quality, White, 50¢.....10&10&5%
A Quality, Drab, 55¢.....10&10&5%
B Quality, White, 50¢.....28@30%
B Quality, Drab, 55¢.....31@33%
C Quality, White (only).....26@27¢
Sylvan Spring, Extra Braided, White, 34¢
Sylvan Spring, Extra Braided, Drab, 30¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....25¢
Samson—
Braided, White Cotton, 50¢...30@30&5%
Braided, Drab Cotton, 55¢...30@30&5%
Braided, Italian Hemp, 55¢...30@30&5%
Braided, Linen, 80¢.....30@30&5%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.)..... 40%
Blake's Pattern.....₩ doz $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—

Grain.....50&5&2@50&10&2%

Crayons.

White Crayons, ₩ gr, 12@12½¢.....10%
D. M. Steward Mfg. Co., Metal Workers, ₩ gr, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50.....25%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain.

Cutters—

Meat.

Dixon's ₩ doz.....40&5%
Nos.... 1 2 3 4
$14.00 $17.00 $19.00 $20.00
Woodruff's ₩ doz.....40&5%
Nos.....100 150
$15.00 $18.00
Hales Pattern ₩ doz.....70@70&5%
Nos.....11 12 13
$27.00 $33.00 $45.00
American.....30%
Nos..... 1 2 3 4 B 5
Each....$5 $7 $10 $25 $50 $60
Enterprise.....30%
Nos.....10 12 22 32 42
Each.....$3 $2.50 $4 $6 $15
Great American Meat Cutter.....30%
Nos..... 112 116 118 120 122
Each....$2.00 $2.75 $3.00 $2.50 $4.00
Miles' Challenge ₩ doz.....45@45&10%
Nos.....1 2 3
$22.00 $30.00 $40.00
Home No. 1.....₩ doz, $26.00, 55&10%
Draw Cut, each:
Nos..5 2 6 8
$50 $75 $80 $225 .....20@25%
Great American.....30%
Beef Shavers (Enterprise).....20&10@30%
Little Giant.....50%
Chadborn's Smoked Beef Cutter, ₩ doz $66.00

Tobacco.

Champion.....20&10@30%
Wood Bottom.....₩ doz $5.00@$5.25
All Iron.....₩ doz $4.25
Nashua Lock Co.'s...₩ doz, $18.00 50@55%
Wilson's.....55%
Sargents's.....₩ doz, $24, 55&10%
Acme.....₩ doz $20.00, 40%

Washer.

Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's.....₩ doz $11.00, 33⅓%
Penny's, ₩ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Cutlery—

Beaver Falls & Booth's 33⅓
Wostenholm.. ..New list in preparation

Dampers, &c—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c.—

Samson Post Hole Digger, ₩ doz $36.00, 25%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers.....₩ doz $12.50@14.00
Leed's.....₩ doz $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00@14.00
Kohler's Little Giant.....₩ doz. $18.00
Kohler's Hercules.....₩ doz. 15.00
Kohler' New Champion.....₩ doz. $9.00
Schnieder.....₩ doz. $18.00
Ryan's Post Hole Diggers..₩ doz $24.00
Cronk's Post Bars, ₩ doz $60.00, 50&5@50&10%
Gibbs Post Hole Digger, ₩ doz $30.00, 50%
Imperial, ₩ doz $15.....45%

Dividers—

See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.

Money, ₩ doz.....$18@$20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....20@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action...25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85

Twist Drills—

Morse.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....50&10&5%

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans-See Pans, Dripping.

Drivers, Screw.

Douglas Mfg. Co.....20@20&10%
Disston's.....60%
Buck Bros.....30%
Stanley R. & L. Co.'s
Varnished Handles.....65&10%
Black Handles.....60&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60.....66⅔&10&10%
P. S. & W.....70%
Knapp & Cowles No.1.....60&50&70%
No. 1 Extra.....60@60&10
Nos. 00 & 4.....50&5@50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ doz $6.00,25&10%
Syracuse Screw-Driver Bits...30&30&5%
Screw-Driver Bits.....₩ doz. 50@75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets. No. 3, $12.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....25&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits.....%

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery.—No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F. FF.
Kegs, ₩ lb	4½¢	5 ¢	2½¢
½ kegs, ₩ lb	4¾¢	5½¢	2¾¢
¼ kegs, ₩ lb	5 ¢	5½¢	3 ¢
10-lb cans, 10 in case	6 ¢	6½¢	5 ¢
10-lb cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.

Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Expanded Metal.

List No. 5.

Lathing.....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....20%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Fasteners, Blind—

Mackrell's, ₩ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Washburn's Old Pattern, ₩ gr.....$9.00
Merriman's.....new list
Austin & Eddy No. 2008 ₩ gr.....$9.00
Security Gravity, ₩ gr.....$9.00

Faucets.—

Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ doz $50.00.....30&10%
Lane's, ₩ doz $36.00.....25&10%
Victor, ₩ doz $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—

Derby and Cincinnati.....45&5%
Brewster.....50&5%

Files—

Domestic—

Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75%
(extra prices on certain sizes)
Other makers, best brands.60&10@60&20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Nicholson's Horse Rasps....60&10@60&10&5%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%

Imported—

Moss & Gamble....List, April 1, 1883, 15%
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps..American list, 60%

Fixtures.

Grindstone—

Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—

Hay, Manure, &c., Asso List....66⅔@70%
Hay, Manure, &c., Phila. List 60@60&5%
Plated, see Spoons.

Frames—

Saw—

White Vermont.....₩ gro $9.00@10.00
Red, Polished and Varnished.....₩ doz $1.50, 25%

Screen, Window and Door—

Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons..33⅓@ 33⅓&10%
Stearns' Frames and Corners..25@25&10%

Freezers, Ice Cream—

White Mountain.....60@60&5%
Granite State.....55@55&5%
Arctic.....70@70&5%
American.....60%
Buffalo Champion.....55@55&5%
Shepard's Lightning.....55@55&5%
Gem.....65%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60%
Peerless and Giant.....50&10%
Zero and Pet.....65&10%
Boss.....65&10@10%
Keystone, P. D. & Co., each, $1.50.....20%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.

Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10 %; 2 to 5 gro., 20 %; 5 to 10 gro.....30 %
Copper, 1 to 6 doz., 15 %; 6 to 12 doz., 20 %; over 12 doz.....25 %

Fuse— ₩ 1000 ft

Common Hemp Fuse, for dry ground..$2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr.. 4.85
Triple Taped Fuse, for very wet gr.. 5.80
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

Gates, Molasses—

Stebbin's Pattern.....75&10@80%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....20%
Lincoln's Pattern.....70@70&10%
Weed's.....20&10%
Ross. ₩ doz:
No 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.

Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....25%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....10&10%

Gimlets—

Nail and Spike.....50&10&5%
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
"Bee," ₩ gr $12.....25@25&5%

Glue—

Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Le Page & Co.'s Improved Process 25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.

Fraser's.....Keg ₩ lb 4¢, Pail ₩ lb 5¢
Fraser's, in boxes.....₩ gr $9.50
Dixon's Everlasting, in bxs...₩ doz 1 lb $1.20; 2 lb $2.00
Dixon's Everlasting....10-lb pails, ea. 35¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones—

Small, at factory.....₩ ton $7.50@9.00

Grindstone Fixtures—See Fixtures, Grindstone.

Hack Saws—See Saws.

Hafts, Awl.

Sewing, Brass Fer. ₩ gr, $3.50.....45&10%
Pat. Sewing, Short. $1.00 ₩ doz.....40&10%
Pat. Sewing, Long.....₩ doz $1.20
Pat. Peg, Plain Top. ₩ gr $10.00...45&10%
Pat. Peg, Leather Top. ₩ gr $12.00.45&10%

Halters.

Covert's, Rope, ½-in. Jute..... 50&2%
Covert's, Rope, ½-in. Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse and Cattle Ties, 60&10&2%
Covert's Adj. Web Halters.....35&2%

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.,
Humason & Beckley.....
Atha Tool Co.,
Fayette R. Plumb.....
C. Hammond & Son.....
Vernee.....
50@50&10%
Hartford, Nail Hammers..35&10@40&5%
Hartford Machinists, &c.....50@50&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@25
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%

Heavy Hammers and Sledges—

5 lb and under.....₩ lb 40¢
3 to 5 lb.....₩ lb 36¢ 70@70&10%
Over 5 lb.....₩ lb 30¢
Wilkinson's Smiths.....10½¢@11¢₩ lb

Handcuffs and Leg Irons—See Police Goods,

Handles—

Atkins' No. 1 Loop, ₩ pair, 28¢; No. 13¢; No. 6, 16¢; No. 2 and No. Reversible, 18¢.

Cross-Cut Saw Handles—

Boynton's Loop Saw Handles, 50¢....60%
Champion.....15%

Iron, Wrought or Cast—

Door or Thumb.

Nos.	0	1	2	3
Per doz.	$0.90	1.00	1.18	1.35

1.50 60&10@10%

Roggin's Latches.....₩ doz 30¢@35¢
Bronze Iron Drop Latches..₩ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88 ..... net
Barn Door, ₩ doz $1.40.....10&10%
Chest and Lifting.....70%

Wood—

Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₩ gr $2.00
Hickory Firmer Chisel, ass'd. ₩ gr 4.50 } 40% dis
Hickory Firmer Chisel, large. ₩ gr 5.00 }
Apple Firmer Chisel, ass'd...₩ gr 5.00 }
Apple Firmer Chisel, large...₩ gr 6.00 }
Socket Firmer Chisel, ass'd...₩ gr 3.00 }
Socket Framing Chisel, ass'd. ₩ gr 5.00 }
J. S. Smith & Co.'s Pat File.....60%
File, assorted.....₩ gr 2 75 } 40&
Auger, assorted.....₩ gr 5.00 } 40&10%
Auger, large.....₩ gr 7.00 }
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....₩ set $1.2[illegible]
Pat. Auger, Swan's.....₩ set $1.0[illegible]
Hoe, Rake, Shovel, &c.....50&10%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track.....65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....60%
Climax Anti-Friction for Wood Track.....55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling's Imp'ved (Anti-Friction).65&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Cheritree.....50&10%
Kidder's.....50&10@60%
The Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₩ doz pr. 4 in, $10.00; 5 in, $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50@5%
Wood Track Iron Clad, ₩ ft. 10¢.....50 &15@60%
Carrier Steel Anti-Friction.....50&10%
Architect, ₩ set $6.00.....20%
Eclipse.....20&10%
Felix, ₩ set $4.50.....20%
Richards'.....30@30&10%
Lane's Standard.....50&5&50&10%
Lane's New Standard.....50@50&5%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20&10@20&10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American, ₩ set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....40%
Paragon, Nos. 1, 2 and 3.....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron.....50%
Nickel, Malleable Iron and Steel.....40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star.....40&10@40&10&5%
May.....50&5@50&10%
Barry, $6.00.....40&10%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co. Blood's. Hunt's. Hurd's. Mann's. Peck's. Underhill's. } 40 & 10 @ 50&5%
Buffalo Hammer Co. }
Fayette R. Plumb. }
C. Hammond & Son... }
Kelly's. }
Sargent & Co. }
P., S. & W. Co. }
Ten Eyck Edge Tool Co. }
Collins.....10%
Schulte, Lohoff & Co.....50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2%
Palmer.....50&5&10%
Seymour.....70&2%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's, Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible..70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....₩ doz $4.40, 60%
N. E.....₩ doz $7.00, 55%
N. E. Reversible.....₩ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₩ doz $5.00, 55&10%
Automatic.....₩ doz $12.50, 50%
Common Sense.....₩ doz pair $4.50, 50%
Seymour's.....45&10%
Shepard's.....60&10&5%
Reed's Latch and Hinges. ₩ doz $12.00, 50%

Spring Hinges—

Union Spring and Blank Butts.....40%
Gear's Spring Hinge Co.'s list, March. 1886.....90%
Acme.....30%
J. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem, and Star.....20%
Oxford.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's.....30%
Suckman's.....15@20%
Chicago.....50%
Wiles'.....10%
Devore's.....40%
Rex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Bardsley's Patent.....40%
Stearn's.....50&10%

Wrought Iron Hinges

Strap and T.....75&10%
Screw Hook and Strap. { 6 to 12 in., ₩ D. 4 2-10¢ / 14 to 20 in., ₩ D. 3 7-10¢ / 22 to 36 in., ₩ D. 3 2-10¢
Heavy Welded Hook. { 6 to 12 in., ₩ D. 4 2-10¢ / 14 to 20 in., ₩ D. 3 7-10¢ / 22 to 36 in., ₩ D. 3 2-10¢
Screw Hook and Eye. { ⅛ in., ₩ doz $1.50 / ¼ in., ₩ doz $2.45 / ¾ in., ₩ doz $3.80 } 10%
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 233 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges { 8, 10 & 12 in., ₩ D.....5¢ / "Providence" { over 12 in., ₩ D.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. } 50&10&5
Am. Axe and Tool Co., S. & O. Pat. } @60%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....66⅔&70%
Planter's, Cotton, &c.....66⅔&70%
Warren Hoe.....60%
Magic.....₩ doz $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat.....₩ doz $18.....60%

Bit.

Extension, Barber's, ₩ doz $15.00.....40@40&10%
Ives, ₩ doz $30.00.....60&5@60&10%
Diagonal.....₩ doz $24.00, 40%
Angular.....₩ doz $24.00, 40&5%

File and Tool—

Bals Pat.....₩ doz $4.00; 25%
Nicholson File Holders.....20%
Dick's Tool Holder.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list..... } 60&10&10%
Bird Cage, Reading..... }
Clothes Line, Sargent's list.. }
Clothes Line, Reading list. 60&10@60&10&10%
Ceiling Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading .50&10@50&10&10%

Wrought Iron—

Cotton.....₩ doz $1.25
Cotton Pat. (N. Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)...50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.....50%
Wire Coat and Hat, Miles', list April, 1886.....50%
Indestructible Coat and Hat.....45%
Wire Coat and Hat, Standard.....60%
Handy Hat and Coat.....50&10%
Steady Ceiling Hooks.....50&10%
Beit.....60@60&10%
Atlas, Coat and Hat.....60%

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₩ doz $2.25
Bush.....55@60%
Whittetree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks.....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75@75&5%
Standard.....60&10&5@60&10&10%
Extra.....40&10@60%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee....40&10 @ 60%

Huskers—

Blair's Adjustable.....₩ gr $8.00
Blair's Adjustable Clipper.....₩ gr 7.00
Hubbard's Solid Steel.....₩ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory ...₩ 100 ℔, $2.30@$2.40
Self-Heating.....₩ doz $9.00 net
Self-Heating, Tailors'....₩ doz $18.00 net
Mrs. Potts's Irons.....50&5%
Enterprise Star Irons.....50&5%
Cold Handle Sad Irons.....50&5%
Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons.....25%
B. B. Sad Irons, ₩ ℔.....3 @3¼¢
Combined Fluter and Sad Iron, ₩ doz, $15.00.....15%
Fox Reversible, Self-Fluter ₩ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England.....6¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible.....30@20&5%
National Self-Heating.....30%

Soldering—

Soldering Coppers.....₩ ℔ 22 @ 23¢
Covert's Adjustable, list Jan. 1, 1880. 35&2%

Irons, Pinking, per doz., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy.....33⅓%
Victor.....33⅓%

Kettles— Spun. Stamped.
Brass, 7 to 17 in., ₩ ℔.... 24¢ 22 ¢
Brass larger than 17 in., ₩ ℔..... 26¢ 24½¢
Enameled and Tea—See Hollow-Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₩ doz $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives, list Oct. 1, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Nichols' Butcher Knives.....40&10%
Ames' Shoe Knives.....20@25%
Ames' Bread Knives. ₩ doz $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat. $2.00
Corn, Auburn Mfg. Co. Crescent.....$3.50

Corn—

Bradley's.....10%
Wadsworth's.....25%

Drawing—

Witherby. P. S. & W. Mix. New Haven. Merrill. } .75 @ 75&10 %
Merrill.....60&10@60&10&5%
Douglas.....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning, Mfrs', price ₩ doz $18.00, 25% But jobbers cut this price freely, often selling at $6 @ $8.50.
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₩ doz $11.00@$11.50
Heath's.....₩ doz $13.00@13.50
Auburn Hay, Corn, and Spear Point..50%
Auburn, Straw.....40%
Nolin's Hay.....₩ doz.$7.00 @ $8.00

Mincing.

Am. (2d quality), ₩ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ₩ doz, Single, $2.00; Double, $3 40@45%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable.....₩ doz $3.00 .25%
Buffalo Double Adj'table.₩ doz $3.00 25%

Knobs—

Door Mineral.....60@65%
Door Por. Jap'd.....70@75%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture. Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₩ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladies.— Melting, Sargent's.....55&10%
Melting, Reading.....35&10%
Melting, Monroe's Pat...₩ doz $4.00, 40%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Plain with Guards, ₩ doz.....$4.60@4.25
Lift Wire, with Guards.....$4.50@4.75
Square Plain, with Guards....$4.00@4.25
Sq. Lift Wire, with Guards....$4.25@4.50
Without Guards, 25¢ ₩ doz less.

Miscellaneous.

Police, Small, $6.00; Medium, $7.25; Large, $9.75.....20@25%

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason, Beckley & Co.'s.....70%
Sargent's.....60%&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....75%
Crown, Eagle and Shield.....50%
Reiher's, list Sept. 1, 1890.
Bronzed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60%
Imperial.....50&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's Chalk.....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....25%
Samson, Cotton, No. 4, $2; No. 4½, $2.50; No. 5, $3.00.....10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes.. Nos. 18 19 20
100 ft. $4 00 $3 50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton..₩ doz $7.50, 20%

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, rev Jan. 1, '85..33⅓&2%
Delts, Nos. 36 to 39.....40%
Delts, Nos. 51 to 63.....40&10%
Delts, Nos. 86 to 96.....30%
Stoddard Lock Co.....30&33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&2%
"Champion" Cab. and Combin...33⅓%
Yale.....net prices
Romer's.....35%

Door Locks, Latches, &c.

R. & E. Mfg. Co. list Mar. 20, 1889. } 65&10@70 Much lower net prices often made.
Mallory, Wheeler & Co., list July, '88.....
Sargent & Co., list Aug. 1, '88.....
Reading Hardware Co., list Feb. 2, '88.....
Brittan, Graham & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&25%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Delts Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Shepardson or U. S.....35%
Seed's N. Y. Hasp Lock.....25%

Padlocks—

List Dec. 23, '84.....75@75&10%
Brittan, Graham & Mathes.....75&10%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....25&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 808..15%
A. E. Delts.....40%
Champon Padlocks.....40%
Hotchkiss.....30%
Star.....45%
Horseshoe.....₩ doz, $9. 40@40&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Brown's Pat.....25%
Scandinavian.....90@90&10%
E. T. Fraim's Keystone Scandavian:
Nos. 119, 120, 130 and 140.....90&10%
Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker Barry & Co.
No. 41 line.....45&5%
No. 31 line.....60&5%
No. 21 line.....75@5%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₩ gr..33⅓%
Ferguson's.....33⅓%
Morris and Triumph, list Aug. 16, 1886, 60&2%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₩ gr $4.00
Common Sense, Nickel Plated ₩ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886...70%
Payson's Perfect.....60@60&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60&10@60&10&5%
Liesche's, Nos. 100 and 110, ₩ gr $8; 105, $10.00.....20&10%
Davis, Bronze, Barnes Mfg. Co.....50%
Champion Safety, list March 1, 1888 55@55&5%
Security.....70%
Buckeye.....₩ gro $4.80

Lumber Tools—See Tools, Lumber

Lustre—

Four-ounce Bottles....₩ doz, $1.75; ₩ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas	$5.50	$6.75		50%
Snell's, Rice's Pat.	5.50	6.75	40&10&10%	
Jennings	5.50	6.75	45@45&10%	
Other Machines...	2.35	2.75		
Phillips' Patent with Augers ...	7.00	7.50		

Fluting.

Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3¼-inch Roll, $2.15.....25%
Eagle, 5½-inch Roll, $2.85.....25%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....25%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal ₩ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00.....30%
Shepard Hand Fluter, No. 85 ₩ doz 15 20 .....40%

Shepard Hand Fluter, No. 110 ₱ doz $11.00 ..... 40%
Shepard Hand Fluter, No. 95 ₱ doz $8.00 ..... 40%
Clark's Hand Fluter, ₱ doz $15.00 ..... 35%
Clark's Combined Fluter and Sad Iron, ₱ doz $15.00 ..... 30%
₱ doz $10.00 ..... 10%
Buffalo .....

Hoisting—
Moore's Hand Hoist, with Lock Brake 20%
Moore's Differential Pulley Block .. 40%
Energy Mfg. Co's 25%

Washing—
Anthony Wayne, ₱ doz No. 1, $10; No. 2, $15; No. 3, $12

Mallets.

Hickory ..... 20&10@20&10&10%
Lignumvitæ ..... 20&10@20&10&10%
S. & L. Block Co., Hickory & L. V. ..... 30@30&10%

Mattocks. Regular list ..... 60&10%

Measures—
Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Mills.

Coffee—
Box and Side, List Jan. 1, 1888 ..... 60&2%
American, Enterprise Mfg Co. 30&10@30%
The Swift, Lane Bros. ..... 20&10%

Mincing Knives — See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers — See Drawers, Money.

Mowers, Lawn.

Leading makers ..... 60@60&10&5%
Other makers ..... 60&10&5@60&10&10%
Pennsylvania 60%
Continental 60%
New Model ..... 60&10&5%
New Quaker City ..... 60&10&5%
Great American ..... 60&10&5%

Muzzles—
Safety ..... ₱ doz, $3.00, 25%

Nails.

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15, '89. .75@75&5%
Tack Mfrs.' list ..... 60&10&10%
Wire Nails, Standard Penny.
Card June 1, '89, base .... $2.70 @ $2.75

Horse—See Trade Report.

Nos.	6	7	8	9	10
Ausable	.28¢	26¢	25¢	24¢	23¢.

40&5&2%

Clinton, Fin.. 19¢ 17¢ 16¢ 15¢ 14¢ 30%
Essex .... 28¢ 26¢ 25¢ 24¢ 23¢.
25&10@25&10&10%
Lyra ..... 19¢ 17¢ 16¢ 15¢ 14¢ 30%
Snowden 19¢ 17¢ 16¢ 15¢ 14¢ 30%
Putnam ..... 23¢ 21¢ 20¢ 19¢ 18¢.
1000 ℔ in year 15%
Vulcan ..... 23¢ 21¢ 20¢ 19¢ 18¢..12½&5%
Northwest'n 25¢ 23¢ 22¢ 21¢ 20¢.
25@25&5%
Globe ..... 23¢ 21¢ 20¢ 19¢ 18¢..25&10%
Boston ..... 23¢ 21¢ 20¢ 19¢ 18¢.
20&5&5&2½%
A. C. ..... 25¢ 23¢ 22¢ 21¢ 21¢.
25&10@33½&5%
C. B.-K ..... 25¢ 23¢ 22¢ 21¢ 20¢.
25&10@33½&5%
Maud S. ..... 25¢ 23¢ 22¢ 21¢ 21¢.
40&10&5&2%
Champlain 28¢ 6¢ 25¢ 24¢ 23¢.
25&10@10%
New Haven .. 28 26¢ 25¢ 24¢ 23¢.
25&10@25&10&10%
Saranac ..... 23¢ 21¢ 20¢ 19¢ 18¢...30&10%
Champion ... 25¢ 23¢ 22¢ 21¢ 20¢.
10&10&10%
Capewell .... 28¢ 26¢ 5¢ 24¢ 23¢.
35&5@35&10%
Star ..... 23¢ 21¢ 19¢ 18¢.
10&10@10&12½%
Anchor ..... 23¢ 21¢ 20¢ 19¢ 18¢ 35%
Western .... 23¢ 21¢ 20¢ 19¢ 18¢...40&10%
Empire Bronzed. ..... 14 ₱ ℔.

Picture—
Brass Head, Sargent's list ..... 50&10&10%
Brass Head, Combination list ..... 50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Niles' Patent 40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—
Nuts, off list Dec. 18, 1889: Square. Hex.
Hot Pressed ..... 5.45¢ 6.00¢
Cold Punched ..... 5.00¢ 4.90¢
In lots less than 100 ℔, ₱ ℔, add ½¢; 1-℔ boxes, add 1¢ to list.

Oakum—

Government ..... ₱ ℔ 7@7½¢
U. S. Navy ..... ₱ ℔ @6½¢
Navy ..... ₱ ℔ 5½¢@5¾¢

Oilers—
Zinc and Tin ..... 65&10@70%
Brass and Copper ..... 50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&5%
Malleable, Hammers, Old Pattern, same list 40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass 50%
Olmstead's Tin and Zinc 60%
Olmstead's Brass and Copper 50%
Broughton's Zinc 60%
Broughton's Brass 50%
Gem P. D. & Co. ..... ₱ gro. $2
Steel, Draper and Williams 50%

Openers, Can.
Messenger's Comet ..... ₱ doz $3.00, 25%
American ..... ₱ gross $3.00
Duplex ..... doz 25¢, 15@20%
Lyman's ..... ₱ doz $3.75, 20%
No. 4 French ..... ₱ doz $2.25, 55@60%
No. 5, Iron Handle ..... ₱ gr $6.00, 45@50%
Eureka ..... ₱ doz $2.50, 10%
Sardine Scissors ..... ₱ doz $2 75@3.00
Star ..... ₱ doz $2.75
Sprague, No 1, $2.00 2, $2.25; 3, $2.50 50&10&10%
Excelsior, No 1, $2.50; No. 2, $1.55 ... 40%
World's Best, ₱ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00 ..... 50&10%
Universal, ₱ doz $3.00 ..... 45&5%
Domestic, ₱ doz $2.50 ..... 45%
Champion ₱ doz $2.00 ..... 50%

Packing, Steam—

Rubber—
Standard ..... 60&5@65%
Extra ..... 50@50&5%
N. Y. B. & P. Co., Standard .. 40&10@50%
N. Y. B. & P. Co., Empire ..... 60&5@65%
N. Y. B. & P. Co., Salamander.
₱ ℔ 65¢, 10@15%
Jenkins' Standard. ₱ ℔ 80¢ ... 25@25&5%

Miscellaneous—
American Packing ..... 10¢@11¢ ₱ ℔
Russia Packing ..... 14¢ ₱ ℔
Italian Packing ..... 13¢@14¢ ₱ ℔
Cotton Packing ..... 15¢@17¢ ₱ ℔
Jute ..... 7¢@8¢ ₱ ℔

Padlocks—See Locks.

Pails.

Galvanized Iron—

	Quarts	10	12	14
Gill's Light Weight, ₱ doz.		$2.75	3.00	3.25
Gill's Heavy Weight, ₱ dz.		3.00	3.25	3.75
Helwig's		2.75	3.00	3.25
Sidney Shepard & Co.		2.35	2.85	3.05
Iron Clad		2.50	2.75	3.00
Fire Buckets		2.75	3.25	3.50

Buckets, see Well Buckets.

Indurated Fibre Ware—25%
Star Pails, 12 qt ..... ₱ doz $6.00
Fire, Stable and Milk, 14 qt .. ₱ doz $7.80

Standard Fibre Ware—

	Plain.	Decr'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.00	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt	6.50	7.50

Pans.

Dripping.
Small sizes ..... ₱ ℔ 6¾¢
Large sizes ..... ₱ ℔ 5¾¢
Silver & Co. (Covered) 40%

Fry—
Standard List:

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods ..... 70&10%
Acme Fry Pans ..... 60&10%

Paper and Cloth—

Sand and Emery—
List April 19, 1886 ..... 50@50&10%
Sibley's Emery and Crocus Cloth 30%

Parers.

Apple.
Advance ..... ₱ doz $4.75
Baldwin ..... ₱ doz 5.25
Bonanza ..... each 5.00
Champion ..... ₱ doz 7.25
Daisy ..... ₱ doz 4.00
Dandy ..... each 7.50
Eureka, 1888 ..... each 16.00
Family Bay State ..... ₱ doz 12.00
Favorite ..... ₱ doz 5.00
Gem ..... ₱ doz 5.25
Gold Medal ..... ₱ doz 4.00
Ideal ..... ₱ doz 4.00
Improved Bay State. ₱ doz 27.00 @ 30.00
Little Star ..... ₱ doz 4.50
Monarch ..... ₱ doz 13.50
New Lightning ..... ₱ doz 5.50
Oriole ..... ₱ doz 4.00
Penn ..... ₱ doz 4.00
Perfection ..... ₱ doz 4.00
Pomona ..... ₱ doz 4.00
Rocking Table ..... ₱ doz 6.00
Turntable ..... ₱ doz 4.50
Victor ..... ₱ doz 13.50
Waverly ..... ₱ doz 4.00
White Mountain ..... ₱ doz 4.00
72 ..... ₱ doz 4.25
76 ..... ₱ doz 5.75
78 ..... ₱ doz. 6.50

Potato—
White Mountain ..... ₱ doz $4.50
Antrim Combination ..... ₱ doz $5.50
Hoosier ..... ₱ doz $13.50
Saratoga ..... ₱ doz $5.50

Pencils—
Faber's Carpenters' ..... high list 50%
Faber's Round Gilt ..... ₱ gro $5.25
Dixon's Lead ..... ₱ gro $4.50
Dixon's Lumber ..... ₱ gro $6.75
Dixon's Carpenters' ..... 40&10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00 ..... 60&10%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.

Bow—
Humason, Beckley & Co.'s ..... 60&10%
Sargent & Co's .... $17 and $18 .... 60&10%
Peck, Stow & W. Co... 50&10@50&10&5%

Curtain—
Silvered Glass ..... net
White Enamel ..... net

Escutcheon.
Iron, list Nov. 11, 1885 .. 50&10@50&10&5%
Brass ..... 60@60&5%

Pipe, Wrought Iron—
List September 18, 1889.
1¼ and under, Plain 47½%
1¼ and under, Galvanized 40%
1½ and over, Plain 60%
1½ and over, Galvanized 47½%
Boiler Tubes, Iron.
1¾ and under 45%
2 to 4 inch 50%
4-inch and larger 52½%

Planes and Plane Irons—

Wood Planes—
Molding ..... 35&2%
Bench, First Quality ..... 50&2%
Bench, Second Quality ..... 55&2%
Bailey's (Stanley R. & L. Co.). ... 40&10%

Iron Planes—
Bailey's (Stanley R. & L. Co.) ..... 40&10@40&10&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 20&10@20&10&10%
Victor Planes (Stanley R. & L. Co.). ..... 20&10@20&10&10%
Steer's Iron Planes ..... 35@35&10%
Merrien Mal. Iron Co.'s ..... 40@40&10%
Davis's Iron Planes ..... 40@40&10%
Birmingham Plane Co. ..... 50@50&10%
Gage Tool Co.'s Self-Setting ... 20&10&10%
Chaplin's Iron Planes ..... 40@40&10%
Sargent's ..... 30&10@30&10&10%
Standard Tool Co. ..... 50@50&5%

Plane Irons—
Butcher's ..... $5.00@$5.25 to 2
Buck Bros. 30%
Auburn "Thistle" ..... } 35&2%
Ohio ..... }
Sandusky ..... }
S. & I. J. White 25%

Plates.

Felloe ..... ₱ ℔ 6¢@6¾¢

Pliers and Nippers—
Button's Patent ..... 50@50&10%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ₱ doz ..... 20&10@33½%
Humason & Beckley Mfg. Co. .50@50&10%
Gas Pliers 60%
Gas Pliers, Custar's Nickel Plated. .60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel 25%
P. S. & W. Cast Steel 50%
P. S. & W. Tinners' Cutting Nippers, add 6% dis 10%
Carew's Pat. Wire Cutters 20%
Morrill's Parallel, ₱ doz, $12.00 .... 50&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—
Regular List ..... 70&10@70&10&10%
Disston's 50%
Pocket Levels ..... 70&10@70&10&10%
Davis Iron Levels 30%
Davis' Inclinometers ..... 10&10%

Poachers.

Egg.
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00 ..... 25%
Silver & Co., 6-Ring.. ₱ doz $4; 3-Ring $2

Pokes, Animal—
Bishop's I. X. L. ..... ₱ doz $6.00
Bishop's O. K. ..... ₱ doz $5.25
Bishop's Pioneer ..... ₱ doz $3.75
Bishop's American ..... ₱ doz $2.75
Eagle, Double Stale ..... ₱ doz $5.75
Eagle, Single Stale ..... ₱ doz $3.75
Buckeye, Single Stale ..... ₱ doz $2.75

Police Goods.
R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's 25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00: 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00 ..... 25%
J. P. Lovell's Police Goods 25%

Polish, Metal.
Prestoline 30%
Prestoline Paste 33⅓%
Gaston's Silver Compound 33⅓%

Polish, Stove.
Joseph Dixon's ..... ₱ gro $6.00, 10%
Gem ..... ₱ gro $4.50, 10%
Gold Medal ..... ₱ gro $6.00, 25%
Mirror ..... ₱ pro $6.00, —%
Lustro ..... ₱ gro $4.75
Ruby ..... ₱ gro $3.75
Rising Sun, 5 gro lots ..... ₱ gro $5.50
Dixon's Plumbago ..... ₱ ℔ 8¢
Boynton's Noon Day, ₱ gro 13.00
Parlor Pride Stove Enamel. ₱ gro
Yates' Liquid, 2 3 5 10 gal.... ₱ gal ...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10-℔ cans, ₱ ℔ 12½¢
Jet Black ..... ₱ gro $3.50
Japanese ..... ₱ gro $3.50
Fireside ..... ₱ gro $2.50
Diamond O. K. Enamel ..... ₱ gro $19.00
Bonnell's Liquid Stove Polish. ₱ gro $9.00
Bonnell's Paste Stove Polish.. ₱ gro $6.00
Black Eagle Bensine Paste, 5 and 10 ℔ cans ..... 12½¢
Black Jack Water Paste, 5 and 10 ℔ cans ..... 12½¢
Nickel Plate Paste ..... ₱ gro $6.00

Peppers, Corn—
Round or Square, 1 qt.. ₱ gr $10.00@10.50
Round or Square, 1½ qt.. ₱ gr $15@15.50
Round or Square, 2 qt.. ₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.

Glue—
Tinned 40%
Enameled ..... 40&5%
Family, Howe's "Eureka" 40%
Family, L. F. C.'s "Handy" 50%

Presses.

Fruit and Jelly—
Enterprise Mfg. Co. ..... 30&10@30%
Henis ..... ₱ doz $3.50
Shepard's Queen City 40%
Silver & Co. ..... ₱ doz $2.75

Pruning Hooks and Shears.—See Shears.

Pullers.

Nail.
Curtiss Hammer ..... ₱ doz $9.00
Giant, No. 1 ..... ₱ doz. $13.00, 10%
Giant, No. 2 ..... ₱ doz, $15.00, 10%
Pelican ..... ₱ doz, $9.00, 25%

Pulleys—
Hot House, Awning, &c. ..... 60&10%
Japanned Screw ..... 60&10%
Brass Screw ..... 60&10%
Japanned Side ..... 60%&10%
Japanned Clothes Line ..... 60&10%
Empire Sash Pulley ..... 55@60%
Moore's Sash, Anti-Friction 50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 ..... 50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70 ..... 50%
Hay Fork, "F" Common and Pat. Bushed 20%
Hay Fork, Tarbox Pat. Iron 20%
Hay Fork, Reed's Self-Lubricating ... 60%
Shade Rack 45%
Tackle Blocks ..... See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00 ..... 40%

Pumps—
Cistern, Best Makers ..... 60@60&10%
Pitcher Spout, Best Makers ..... 67½@70%
Pitcher Spout, Cheaper Goods. 70@70&5%

Punches—
Saddlers' or Drive, good, ₱ doz ... 60@65%
Bemis & Call Co.'s Cast Steel Drive.. 50&5%
Bemis & Call Co's Springfield Socket. 50&5%
Spring, good quality ... ₱ doz $2.50@2.60
Spring, Leach's Pat. 15%
Bemis & Call Co.'s Spring and Check .. 40%
Solid Tinners', P.S. & W. Co., ₱ doz $1.44, 55%
Tin'rs' Hollow Punches P.S. & W. Co. 20&2%
Rice Hand Punches 15%
Avery's Revolving 40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—

Sliding Door. Wr't Brass, ₱ ℔ 35¢ 15%
Sliding Door, Bronzed Wr't Iron.. ₱ ft. 7¢
Sliding Door, Iron, Painted, ₱ foot 4¢, 40%
Barn Door Light. In. ½ ¾ ¾
Per 100 feet $2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet ... $2.15 2.70 3.35.. net
Terry's Steel Rail, ₱ foot ..... 4½¢
Victor Track Rail, 7¢ ₱ foot ..... 50&2%
Carrier Steel Rail, ₱ foot ..... 4½¢
Moore's Wrought Iron 25%

Rakes—
Cast Steel, Association goods ... 66%@70%
Cast Steel, outside goods 60&10&10@70&5%
Malleable ..... 70@70&5%
Gibbs Lawn Rake ..... $12.00, 50&15
Canton Lawn Rake ..... $9.00, 50&10
Ft. Madison Prize Bow Brace and Peerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00 ..... 25%

Razors—
J. R. Torrey Razor Co 20%
Wostenholme and Butcher, $10.00 to £. 10%
Jordan's AAA1, list Nov. 1, 1889 ..... 50%
Jordan's Old Faithful, list Nov. 1, '89. 50%
Electric ..... List net

Razor Strops—See Strops, Razor.

Rings and Ringers.

Bull Rings—
Union Nut Co. 55%
Sargent's ..... 60%&10@70&5%
Hotchkiss' low list 30%
Humason, Beckley & Co.'s. ..... 70&10%
Peck, Stow & W. Co's .. 50&10@50&10&10%
Elirich Hdw. Co., White Metal, low list. 50@50&10%

Hog—
Top of the Hill Ringers. ..... ₱ doz $2.00
Top of the Hill Rings. ..... ₱ doz $1.25
Hill's Improved Ringers ... ₱ doz $1.35
Hill's Old Style Ringers. ..... ₱ doz $1.12½
Hill's Tongs ..... ₱ doz $3.00
Hill's Rings ..... ₱ doz bxs $1.00
Perfect Rings ..... ₱ doz bxs $1.50
Perfect Ringers ..... ₱ doz $2.15@2.25
Blair's Hog Ringers ..... ₱ doz $2.10
Blair's Hog Rings ..... ₱ doz 90¢@$1.00
Champion Ringers ..... ₱ doz $2.00
Champion Rings, Double ..... ₱ doz $2.25
Brown's Ringers ..... ₱ doz $2.00
Brown's Rings ..... ₱ doz $1.15@1.25

Rivets and Burrs—
Iron, list Nov. 17, '87 ..... 40%
Copper ..... 50&10%
Coppered Iron, Bettina Brand. 40%

Rivet Sets—See Sets.

Rods—
Stair, Brass ..... 25&2%
Stair, Black Walnut .. .. ₱ doz 40¢

Rollers—
Barn Door, Sargent's list ..... 60&10&10%
Acme Moore's Anti-Friction 55%
Union Barn Door Roller 70%

Rope—
Manila ... ¼ in. and larger ..... ₱ ℔ 13¾¢
Manila ..... ¾ in. ₱ ℔ 14½¢
Manila ..... ¼ and 5-16 in. ₱ ℔ 15¢
Manila Tarred Rope ..... ₱ ℔ 13½¢
Manila, Hay Rope ..... ₱ ℔ 13½¢
Sisal ..... ½ inch and larger ₱ ℔ 9 ¢
Sisal ..... ⅜ in. ₱ ℔ 9½¢
Sisal ..... ¼ and 5-16 in. ₱ ℔ 10¾¢
Sisal, Hay Rope ..... ₱ ℔ 9 ¢
Sisal, Tarred Rope ..... ₱ ℔ 8¾¢
Sisal, Medium Lathe Yarn ..... ₱ ℔ 8 ¢
New Zealand.. ½ in. and larger ₱ ℔ 9 ¢
New Zealand ..... ⅜ inch, ₱ ℔ 9½¢
New Zealand. ¼ and 5-16 inch, ₱ ℔ 10¾¢
New Zealand, Hay Rope. ... ₱ ℔ 9 ¢
New Zealand, Tarred Rope .... ₱ ℔ 8¾¢
Note.—Manufacturers' prices on above ¾¢ ₱ ℔ less
Cotton Rope ..... ₱ ℔ 15@18¢ net
Jute Rope .... ₱ ℔ 6½@6¾¢

Wire—
List May 1, 1886.
Iron ..... 32½&2½%
Iron, Galvanized ..... 40&2½%
Cast Steel ..... 40&2½%

Rules—
Boxwood ..... 80&10&10@80&10&10&10%
Ivory ..... 50@50&10%
Starrett's Rules and Straight Edges, Steel ..... 25&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery.

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—
Disston's Circular 45%
Disston's Cross Cuts 45%
Disston's Hand 20%
Woodrough & McParlin.
Hand, Panel and Rip 25%
Narrow Champion Cross Cuts with Handles, ₱ foot ..... 20¢
Champion Thin Back Cross Cuts, ₱ foot ..... 28¢
Champion Extra Thin Back Cross Cuts, ₱ foot ..... 31¢
One Man Champion Cross Cuts, ₱ foot ..... 40¢
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip 30%
Narrow Champion Cross Cuts with Handles, ₱ foot ..... 20¢
Champion Thin Back Cross Cuts, ₱ foot ..... 28¢
Champion Extra Thin Back Cross Cuts, ₱ foot ..... 31¢
One Man Champion Cross Cuts, ₱ ft. 40¢

Atkins' Circular Shingle and Heading ..... dis 50%
Atkins' Silver Steel Diamond X Cuts ..... ₩ foot 70¢
Atkins' Special Steel Dexter X Cuts ..... ₩ foot 50¢
Atkins' Special Steel Diamond X Cuts ..... ₩ foot 32¢
Atkins' Champion and Electric Tooth X Cuts ..... ₩ foot 30¢
Atkins' Hollow Back X Cuts. ..... ₩ foot 20¢
Atkins' Mulay, Mill and Drag 40%
Atkins' One-Man Saw, with handles. ..... ₩ foot 40¢
Peace Circular and Mill 45%
Peace Hand Panel and Rip 25%
Peace Cross Cuts 45%
Richardson's Circular and Mill 45%
Richardson's X Cuts 45%
Richardson's Hand, &c. 25%
C. E. Jennings & Co., Hand, Panel and Rip 25%

Hack Saws—

Griffin's, complete ..... 40&10@50%
Griffin's Hack Saw, Blades ..... 40&10@50%
Star Hack Saws and Blades 25%
Eureka and Crescent 25%

Scroll—

Lester, complete, $10.00 ..... 25%
Rogers, complete, $4.00 ..... 25%
Barnes' Builders' and Cabinet Makers', $15 ..... 25%
Barnes' Scroll Saw Blades 35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality, ₩ doz $21.00
Hatch, Tea, No. 161 ..... ₩ doz $6.75@7.00
Union Platform, Plain ..... $2.10@2.20
Union Platform, Striped ..... $2.30@2.30
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls ..... 30@30&10%
Riehle bros.' Platform 40%

Scale Beams—See Beams, Scale

Scissors, Fluting 45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.50 ..... 30&10
Box, 1 Handle ..... ₩ doz $4.00, 10
Box, 2 Handle ..... ₩ doz $6.00, 10
Defiance Box and Ship ..... 20&10%
Foot ..... 50&10@60%
Ship, Common ..... ₩ doz $3.50 net
Ship, R. I. Tool Co 10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—

Bench, Iron ..... 55&10@55&10&10%
Bench, Wood, Beech ..... ₩ doz $2.25
Bench, Wood, Hickory ..... 20&10%
Hand, Wood ..... 25&10@25&10&5%
Lag, Blunt Point, list Jan. 1, 1890 ..... 75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890 ..... 75@75&10%
Bed ..... 25&5%
Hand Rail, Sargent's ..... 60@60&10%
Hand Rail, H. & B. Mfg. Co ..... 70&10@75%
Hand Rail, Am. Screw Co 75%
Jack Screws, Millers Falls list ..... 50@50&5%
Jack Screws, P. S. & W 35%
Jack Screws, Sargent ..... 60&10@60&10&5%
Jack Screws Stearns' ..... 40@40&10%

Cork—

Humason & Beckley Mfg. Co ..... 40&10@50%
Williamson's ..... 33½@33½&5%
Hows Bros & Hulbert 35%

Machine—

Flat Head, Iron 55%
Round Head, Iron 50%

Wood—

List March 1, 1889.
Flat Head Iron 50%
Round Head Iron 40%
Flat Head Brass 45%
Round Head Brass 35%
Flat Head Bronze 45%
Round Head Bronze 35%
Extra 10 @ 10&5 % often given
Rogers' Drive Screws ..... @66⅔%

Scroll Saws—See Saws, Scroll.

Scythe Snaths—See Snaths, Scythe.

Sets.

Awl and Tool."

Aiken's Sets, Awls and Tools, No. 20, ₩ doz $10.00 ..... 55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9. ..... 25@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12, 2, $18 ..... 25%
Henry's Combination Haft ..... ₩ doz $6.50
Brad Sets, No. 42, $10.50; No. 43, $12.50 ..... 70&10&5%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 ..... 30&10%

Nail—

Square ..... ₩ gr., $4.00@$4.25
Round ..... ₩ gr. $3.25
Buck Bros 27½%
Cannon's Diamond Point ..... ₩ gr., $12, 20%

Rivet,

Regular list ..... 50&10%

Saw—

Stillman's Genuine ..... ₩ doz $5.00@7.75, 40&5%
Stillman's Imita ..... ₩ doz $3.25@5.25, 40&5@40&10%
Common Lever ..... ₩ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00, 40&10@50%
Leach's ..... No. 0, $8.00; No. 1, $15, 15@20%
Nash's ..... 20%10@20&10&10%
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. ..... 30&5%
Bemis & Call Co.'s Lever and Spring Hammer ..... 30@5%
Bemis & Call Co.'s Plate 10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine ..... $13.00, 50&10%
Aiken's Imitation ..... $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star 25%
Leopold ..... 40&10@50%
Atkin's Lever ..... ₩ doz No. 1, $6.00
Atkin's Criterion ..... ₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 ..... 40&10%
Avery's Saw Set and Punch 50%
Chieftain H. R. Co.'s Superior ..... ₩ doz $15, 50%

Sharpeners, Knife.

Parkin s.
Applewood Handles ..... ₩ doz $6.00, 40%
Rosewood or Cocobolo ..... ₩ doz $9.00, 40%

Shaves, Spoke.

Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) ..... 40&10%
Stearns' ..... 30&10%
Cincinnati ..... 25&10%

Shears—

American (Cast) Iron ..... 75&10@75&10&5%
Barnard's Lamp Trimmers ..... ₩ doz $3.75
Tinners' ..... 20&2%
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears 33⅓%
First quality C. S. Trimmers ..... 80@80&10%
Second quality C. S. Trimmers. 80&10@80&10&10%
Acme Cast Shears ..... 10&10%
Diamond Cast Shears 10%
Clipper ..... 10&10%
Victor Cast Shears ..... 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel 40%
Chicago Drop Forge & F. Co., Solid Steel Forged 60%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list. 60%
Electric ..... List net

Pruning Shears and Hooks.

Disston's Combined Pruning Hook and Saw ..... ₩ doz $18.00, 20&10%
Disston's Pruning Hook, ₩ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools 40%
Pruning Shears, Henry's Pat. ₩ doz $3.75@4.00 net
Henry's Pruning Shears, ₩ doz $4.25@4.50 net
Wheeler, M. & C. Co.'s Combination, ₩ doz $12.00, 20%
Dunlap's Saw and Chisel, ₩ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co 60%

Tinners', &c.—

Shears and Snips (P. S. & W.) ..... 20@25%
Snips, J. Mallinson & Co 33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888 ..... 50&10@60&5%
R. & E., list Dec. 18, 1885 ..... 55&20%
Corbin's list ..... 60&10&2%
Patent Roller ..... 60&10&2%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 18, 1885 ..... 60&2%
Moore's Anti-Friction 50%

Sliding Shutter—

R. & E. list Dec. 18, 1885 ..... 60&10&2%
Sargent's list ..... 60&10%
Reading list ..... 60&10&10%

Ship Tools—

L. & I. J. White ..... 20&5%

Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phœnix, at factory. $4.00

Mule—

Add $1 ₩ keg to above prices.

Ox, Wrought—

Ton lots ..... ₩ ℔ 9¢
1000 ℔ lots ..... ₩ ℔ 9½¢
500 ℔ lots ..... ₩ ℔ 10¢

Shot—

(Eastern prices 2¢ off, cash, 5 days.

Drop, ₩ bag, 25 ℔ $1.62
Drop, ₩ bag, 5 ℔ ..... .38
Buck and Chilled, ₩ 25-℔ bag 1.87
Buck and Chilled, ₩ 5-℔ bag ..... .43

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885 ..... 20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron ..... 50&10%
Griffith's C. S. ..... 60@60&10%
Griffith's Solid C. S. R. R. Goods 20%
Old Colony (Sanford Fork & Tool Co.) 35%
St. Louis Shovel Co ..... 30@20&7½%
Hussey, Binns & Co ..... 15@25%
Hubbard & Co ..... 20@20&7½%
Lehigh Mfg. Co ..... 50&10%
Payne Pettebone & Son, list January, 1886 ..... 30%
Remington's (Lowman's Pat.) ..... 10@40%
Rowland's, Black Iron ..... 50&10%
Rowland's Steel ..... 60&5@60&10%

Shovels and Tongs—

Iron Head ..... 60&10@60&10&5%
Brass Head ..... 60&10&10%

Sieves—

Mann's Tin Rim ..... 50&25%
Buffalo Metallic, S. S. & Co ..... 50&25%
Shaker (Sarler's Pat.) Flour Sifters ..... ₩ doz $2.00; ₩ gr $21.60
Electric ..... ₩ gr $21.00
A. & W. Sifters ..... ₩ doz 1.00
Hunter's ..... ₩ doz $2.00
Smith's Adjustable Sifters ..... ₩ doz $2.00
Smith's Adjustable Milk Strainer. ..... ₩ doz $2.00
Smith's Adjustable T. & C. Strainer. ..... ₩ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₩ doz..	80¢	$1.00
Mesh 20, Nested, ₩ doz..	90¢	1.10
Mesh 24, Nested, ₩ doz..	$1.15	1.25

Skeins, Thimble—

Western list ..... 75&5@75&10%
Columbus Wrt. Steel. Special net prices
Coldbrookdale Iron Co 60%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 35%

Slates—

School, by case ..... 50&10@50&10&10%

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.) 65%
Fitch's (Bristol) ..... 50&10%
Hotchkiss 10%
Andrews 50%
Sargent's Patent Guarded ..... 70&10&10%
German, new list ..... 40&10%
Covert ..... 50&2%
Covert, New Patent ..... 50&5&2%
Covert, New R. E ..... 60&2%
Covered Spring ..... 60&10&10%

Snaths, Scythe.

List ..... 50&10@50&10&5%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₩ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp, Co.'s list ..... 70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list ..... 70&10%
Buffalo S. S. & Co ..... 33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).

Meriden Brit. Co., Rogers ..... 40&15%
C. Rogers & Bros ..... 40&15%
Rogers & Bro ..... 40&15%
Reed & Barton ..... 40@40&5%
Wm. Rogers Mfg. Co ..... 40, 15&5%
Simpson, Hall, Miller & Co ..... 40, 15&5%
Holmes & Edwards Silver Co ..... 40, 15&5%
L. Boardman & Son ..... 50&12½%

Miscellaneous.

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver ..... 50&10&5%
No. 30 Silver Metal ..... 50&10&5%
No. 24 German Silver ..... 50&10&5%
No. 50 Nickel Silver ..... 50&5%
No. 49 Nickel Silver ..... 50&10&5%
Wm. Rogers Mfg. Co.
Rogers' Silver Metal ..... 50, 10&5%
18% Rogers' German Silver ..... 60&5%
22% Rogers' Nickel Silver. ..... 50&5%
German Silver ..... 60@50&5
German Silver, Hall & Elton ..... 50&5% cash
Nickel Silver ..... 50&5@50&10&5% cash
Britannia 60%
Boardman's N'ck'l Silver ..... 40&7½&2% cash
Boardman's Britannia Spoons, case lots ..... 50&12½&5% cash

Springs—

Door.—

Torrey's Rod, regular size ..... ₩ doz $1.80
Gray's, ₩ gr., $20.00 ..... 20%
Bee Rod ₩ gr., $20.00 ..... 20%
Warner's No. 1, ₩ doz, $2.50; No. 2, $3.30 ..... 40&10@50%
Gem (Coil), list April 19, 1886 ..... 10%
Star (Coil), list April 19, 1886 ..... 20%
Victor (Coil) ..... 60@60&10%
Champion (Coil) ..... 60&10@60&10&10%
Philadelphia, 5 in., $5.00; 8 in., $7.75 ..... %
Cowell's ..... No. 1, ₩ doz, $18.00; No. 2, $15.00 ..... 50%
Rubber, complete, ₩ doz, $4.50 ..... 55&10%
Hercules 50%
Shaw Door Check and Spring ..... 35@30@35%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Halt Scroll ..... 60&10&10%
Cliff's Bolster Springs 25%

Squares—

Steel and Iron, Nickel-Plated ..... 80 &10% &10%
Try Square and T Bevels ..... 60&10@60&10
Disston's Try Square and T Bevels 50%
Winterbottom's Try and Miter ..... 30&10%
Starrett's Micrometer Caliper Squares 25%
Avery's Flush Bevel Squares 40%
Avery's Bevel Protractor 50%

Squeezers.

Fodder.—

Blair's ..... ₩ doz $2.00
Blair's "Climax" ..... ₩ doz $1.25

Lemon—

Porcelain Lined, No. 1 ..... ₩ doz $6.00, 25&20%
Wood, No. 2 ..... ₩ doz $3.00, 25%
Wood, Common ..... ₩ doz $1.70@1.75
Dunlap's Improved ..... ₩ doz $3.75, 20%
Sammis ..... No. 1, $5.00; No. 2, $9; 12, $18 ₩ doz ..... 25&10%
Jennings' Star ..... ₩ doz $2.50
The Boss ..... ₩ doz $2.50
Dean's ..... Nos. 1, ₩ doz $6.50; 2, $8.35; 3, $1.90; Queen, $2.50
Little Giant ..... 50@50&5%
King ..... 40&5%
Hotchkiss Straight Flash ..... ₩ doz $12.00
Silver & Co., Glass ..... ₩ gro. $9.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Blind—

Barbed, ½ in. and larger ..... ₩ ℔ 7@7½¢
Barbed, ¾ in ..... ₩ ℔ 8@8½¢
Fence Staples, Galvanized, Fence Staples, Plain ..... Same price as Brb Wire. See Trd. Rep.

Steelyards ..... 40&10@10%

Stocks and Dies—

Blacksmith's
Waterford Goods ..... 40@40&10%
Butterfield's Goods ..... 40@40&10%
Lightning Screw Plate ..... 25@30%
Reece's New Screw Plates ..... 33½@35@40%
Reversible Ratchet 30%
Gardner 25%

Stops, Bench.

Morrill's ..... ₩ doz $9, 60%
Hotchkiss's ..... ₩ doz $3, 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10@25%
McGill's ..... ₩ doz $3 ..... 10%
Cincinnati ..... 25&10%

Stone—

Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone ..... ₩ ℔ 2½¢
Washita Stone, Extra ..... ₩ ℔ 20@21¢
Washita Stone, No. 1 ..... ₩ ℔ 15@16¢
Washita Stone, No. 2 ..... ₩ ℔ 11@12¢
Washita Slips, No. 1, Extra ..... ₩ ℔ 37@40¢
Washita Slips, No. 1 ..... ₩ ℔ 25@26¢
Arkansas Stone, No. 1, 4 to 6 in ..... ₩ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in ..... ₩ ℔ $1.85
Turkey Oil Stone, 4 to 8 in ..... ₩ ℔ 40¢
Turkey Slips ..... ₩ ℔ $1.00@1.50
Lake Superior, Chase ..... ₩ ℔ 16¢
Lake Superior Slips, Chase ..... ₩ ℔ 31@32¢
Seneca Stone, Red Paper Brand ..... ₩ ℔ 18@20¢
Seneca Stone, High Rounds ..... ₩ ℔ 20@25¢
Seneca Stone, Small Whets ..... ₩ gro $24.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.

Cast Steel, Polished ..... ₩ doz $2.25
Cast Iron, Steel Points ..... ₩ doz 80¢
Socket ..... ₩ doz $1.75
Bullard's ..... 25@25&10%

Strops, Razor—

Genuine Emerson ..... 60@60&5%
Imitation " ..... ₩ doz $2.00, 20&10&5%
Torrey's 30%
Badger's Belt and Com ..... ₩ doz $2.00
Lamont Combination ..... ₩ doz $4.00
Jordan's Pat Padded, list Nov. 1, '89 ..... 50%
Electric ..... List net

Stuffers or Fillers, Sausage—

Miles' "Challenge," ₩ doz $20, 50@50&5%
Perry ..... ₩ doz, No. 1, $15.00; No. 0, $21.00 ..... 50&5@50&10%
Draw Cut No. 4, each $30.00 ..... 20%
Enterprise Mfg. Co ..... 20&10@30%
Silver's ..... 40&10%

Sweepers, Carpet.

Bissell No. 5 ..... ₩ doz $17.00
Bissell No. 7 New Drop Pan ..... ₩ doz $19.00
Bissell, Grand ..... ₩ doz $36.00
Grand Rapids ..... ₩ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic ..... ₩ doz $15.00
Jewel ..... ₩ doz $17.00
Improved Parlor Queen,
Nickeled ..... ₩ doz $27.00
Japanned ..... ₩ doz $24.00
Excelsior ..... ₩ doz $22.00
Garland ..... ₩ doz $18.00
Parlor Queen ..... ₩ doz $24.00
Housewife's Delight ..... ₩ doz $15.00
Queen ..... ₩ doz $16.00
Queen, with band ..... ₩ doz $18.00
King ..... ₩ doz $30.00
Weed, Improved ..... ₩ doz $18.00
Hub ..... ₩ doz $16.00
Cog-Wheel ..... ₩ doz $16.00
Conqueror ..... ₩ doz $22.00
Easy ..... ₩ doz $22.00
Monarch ..... ₩ doz $22.00
Goshen ..... ₩ doz $21.00

Tacks, Brads, &c.—

List Oct. 19, 1889. Standard Weights.

Carpet Tacks—
American Iron, Blued 77½%
Am'ican Iron, Tin'd or Cop'd. 77½%
Steel, Plain or Bright 75%
Steel, Tinned or Coppered 75%
Swedes Iron, Blued 75%
Swedes Iron, Tinned or Cop'd 75%
American Iron Cut Tacks 75%
Swedes Ir. Upholst'rs' Tacks, Blued. 75%
Swedes Iron Upholsterers' Tacks, Tinned 77½%
Gimp and Lace Tacks, Blued 75%
Gimp and Lace Tacks, Tinned 77½%
Swedes Iron Basket or Trimmers' Tacks ..... 70&10%
Miners' Tacks 77½%
Bill-Posters' or Railroad Tacks. 75%
Bill-Posters' or Railroad Tacks, Tinned 77½%
Copper Tacks 40%
Copper Finish. & Trunk Nails 40%
Cigar Box Nails 50%
Zinc Glaziers' Points 50%
Picture-Frame Points 50%
Looking-Glass Tacks 50%
Brush Tacks 60%
Tin-Capped Trunk Nails 60%
Finishing Nails 70%
Trunk and Clout Nails, Black and Tinned 72½%
Common and Patent Brads 70%
Hungarian Nails 70%
Basket and Chair Nails 65%
Leathered Carpet Tacks 40%

Miscellaneous—

Double-Pointed, 120 count ..... 85&10%
Wire Carpet Nails ..... 60&10%
Plymouth Rock Steel Carpet Tacks. 25%

Extra 10 @ 10&10 %

Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....50&10%

Tapes, Measuring—

American.....40@40&5%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale- Steel

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—See Shears, Tinners', &c.

Tinware—

Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&10&5%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.

Coopers'—

Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Ehaves, Cincinnati Tool Co.....20%

Lumber.

Ring Peavies, "Blue Line"..₩ doz $20.00
Ring Peavies, Common.....₩ doz $18.00
Steel Socket Peavies.....₩ doz $21.00
Mail. Iron Socket Peavies....₩ doz $19.00
Cant Hooks, "Blue Line"..₩ doz $16.00
Cant Hooks, Common Finish..₩ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₩ doz $12.00
Hand Spikes....₩ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₩ doz $18.00

Saw.

Atkins' Perfection.....₩ doz $12.00
Atkins' Excelsior.....₩ doz $6.00
Atkins' Giant.....₩ doz $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters — See Lifters, Transom.

Traps—

Game—

Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₩ doz holes, 11@12¢
Mouse, Round Wire.....₩ doz $1.50, 10%
Mouse, Cage, Wire.....₩ doz $2.50, 10%
Mouse, Catch-'em-alive....₩ dz $2.50 10%
Mouse, Bonanza.....₩ doz $0.90@$1.00
Mouse, Delusion.....₩ $1.00@$1.25
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz., 90¢; in full cases, ₩ doz.....75¢
Hotchkiss Imp. Rat Killer..₩ gro $18.50
Hotchkiss New Rat Killer...₩ gro $16.50
Schuyler's Rat Killer.....₩ gro $15.00

Triers—

Butter and cheese.....25%

Trimmers, Spoke.

Bonney's.....₩ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ doz. 55&10%
Douglas'.....₩ doz $9.00, 20%
Cincinnati.....25%

Trowels—

Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering.....25%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list. '82.....40%

Tubes, Boiler—

See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls	26¢	34¢
No. 12, ¼ and ⅛ ℔ Balls	25¢	33¢
No. 18, ¼ and ⅛ ℔ Balls	22¢	32¢
No. 24, ¼ and ⅛ ℔ Balls	22¢	32¢
No. 36, ¼ and ⅛ ℔ Balls	20¢	31¢

No. 264, Mattrass, ¼ and ⅛ ℔ Balls.52@54¢
Chalk Line, Cotton, ⅛ ℔ Balls.....25¢
Mason Line, Linen, ⅛ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine).....15½¢
3-Ply Hemp, 1 ℔ balls.....16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls.....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔...15¢@16¢
2, 3, 4 and 5-Ply Jute, ⅛ ℔ Balls.....10¢
Wool.....6½¢@6½¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

V

lises—

Solid Box.....50&10@50&10&5%

Parallel—

Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....60%&10%
Hopkins'.....₩ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%

Miscellaneous.

Combination Hand Vises.....₩ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%
Enterprise Pipe Vises, each.....$3.00

W

agon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.

Cast Iron, Hollow—

Stove Hollow-Ware—
Ground.....55&5@60&5%
Unground.....55&10@55&10&5%
White Enameled-Ware—
Maslin Kettles.....60&10&5%
Boilers and Saucepans.....40%
Tinned Boilers and Saucepans.....40%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%

Kettles—

Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.	$2.00	$2.25
Wash-Basins, 12 in.	2.25	2.75
Keelers, 11¼ in.		4.00
Cuspidors		3.00
Spittoons, "Daisy," 8 in.	4.00	4.50
Peck Measure	4.00	
Half-peck Measure	3.50	

See also Pails.

Indurated Fiber—25%

Spittoons, No. 2, ₩ doz.....$9.00
Basins, Ringed, ₩ doz., No. 2, $4.80; No. 3.....$4.20
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₩ nest.....$7.50
Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest.....$3.70
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest.....$2.25
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₩ set.....$3.00
Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), ₩ set.....$3.00
See also Pails.

Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.

Reed & Barton	40&5%
Meriden Britannia Co.	
Simpson, Hall, Miller & Co.	
Rogers & Brother	
Hartford Silver Plate Co	40&5&5%
William Rogers Mfg. Co.	

Washers—

Size	¼	5-16	⅜	½	⅝	¾	1
Washers	6¾	5½	4½	3½	3	3	3

In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-1 boxes 1¢ to list.

Wedges—

Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 4 ¢

Weights, Sash—

Solid Eyes.....₩ ton $18@$19

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.

8 in., $2.25; 10 in., $2.70; 12 in., $3.25

Wire and Wire Goods—

Iron—

Market.
Br. & Ann., Nos. 0 to 18.....72½%
Cop'd, Nos. 0 to 18.....70%
Galv., Nos. 0 to 18.....62½%
Tin'd, Tinned list Nos. 0 to 18.....62½%
Stone,
Br. and Ann'd, Nos. 16 to 18....72½%
Bright and Ann'd, Nos. 19 to 26.....75%
Br. and Ann'd, Nos. 27 to 36.....77½%
Tinned.....
Tinned Broom Wire, 18 to 21, ₩ ℔....55¢
Galvanized Fence, Nos. 8 and 9.....65%
Annealed Fence, Nos. 8 and 9.....75%
Annealed Grape, Nos. 10 to 14.....75%
Brass, list Jan. 18, 1884.....25%
Copper, list Jan. 18, 1884.....35%
Barb Fence.....See Trade Report
Annealed Wire on Spools.....50%
Malin's Steel and Tin'd on Spools.....50%
Malin's Brass and Cop. on Spools.....40%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$4.00 to 2, 50¢
Steel Music Wire, Nos. 13 to 20..55¢ ₩ ℔
Picture Wire.....New list 50%
Wire Clothes Lines, see Lines.

Bright Wire Goods—

Standard list.....65%

Wire Cloth and Netting.

Painted Screen Cloth, good quality, ₩ 100 sq. ft., $1.60 @ $1.75
Galvanized Wire Netting.....70&10@75%

Wire Rope—See Rope, Wire.

Wrenches—

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&3%
Coes' "Mechanics".....50&10&3%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'..60&10%
Lamson & Sessions' Standard...70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..} 75@75&10
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....50&3%
Acme, Nickeled.....40&3%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—

List March 11, 1880, 2½ cash.

Wrought Goods—

Staples, Hooks, &c., list Jan. 12, 1886. 60&15@65%

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	62	@	64
Linseed, City, boiled.....	65	@	67
Linseed, Western, raw.....	..	@	59
Lard, City, Extra Winter..	53	@	54
Lard, City, Prime.....	50	@	51
Lard, City, Extra No. 1.....	45	@	46
Lard, City, No. 1.....	42	@	43
Lard, Western, prime.....	50	@	51
Cotton-seed, Crude, prime.	27	@	28
Cotton-seed, Crude, off grades.....	20	@	25
Cotton-seed, Summer Yellow, prime.....	34	@	..
Cottonseed, Summer Yellow, off grades.....	30	@	33
Sperm, Crude.....	..	@	71
Sperm, Natural Spring.....	70	@	72
Sperm, Bleached Spring....	75	@	77
Sperm, Natural Winter.....	76	@	78
Sperm, Bleached Winter...	81	@	83
Whale, Crude.....	..	@	..
Whale, Natural Winter.....	..	@	51
Whale, Bleached Winter....	..	@	53
Whale, Extra Bleached.....	55	@	..
Sea Elephant, Bleached Winter.....	60	@	62
Menhaden, Crude, Sound...	20	@	22
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed..	24	@	25
Menhaden, Bleached W'ter.	31	@	32
Menhaden, Extra Bleached	35	@	..
Tallow, City, prime.....	..	@	45
Tallow, Western, prime....	..	@	..
Cocoanut, Ceylon.....	7⅝@		7¾
Cocoanut, Cochin.....	..	@	8½
Cod, Domestic	31	@	32
Cod, Foreign.....	33	@	34
Red Elaine	31	@	34
Red Saponified..... ₩ ℔	4½@		5
Bank.....per gal	24	@	..
Straits.....	25	@	..
Olive, Italian, bbls.....	70	@	..
Neatsfoot, prime	62½@		75
Palm, prime, Lagos....₩ ℔	6¾@		7

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test.....per gal	8½@		9
Black, 29 gravity, 15 cold test.....	9	@	9½
Black, 29 gravity, summer.	7	@	8
Cylinder, light, filtered.....	15	@	20
Cylinder, dark, filtered	14	@	20
Cylinder, dard, st'm refined	10	@	18
Paraffine, 23½ @ 24 gravity.	12½@		13
Paraffine, 25 gravity.....	11½@		12
Paraffine, 28 gravity.....	10½@		11
Paraffine, red, 21 @ 22 gr'ty	..	@	14½
Paraffine, red, 23½@23 gr'ty	12½@		13

Paints and Colors.

Barytes, Prime White..... ₩ ton.	$21.00	@	$22.50
Barytes, Amer. refined...	20.00	@	....
Barytes, Amer. No. 1....	18.00	@	....
Barytes, Amer. No. 2....	16.00	@	....
Barytes, Amer., off-color.	13.00	@	15.00
Blue, Celestial..... ₩ ℔	6	@	8
Blue, Chinese	50	@	55
Blue, Prussian.....	25	@	40
Blue, Ultramarine	10	@	30
Brown, Spanish	½@		1
Brown, Vandyke, Amer..	3	@	3½
Brown, Vandyke, English	6	@	8
Black, American Drop....	8	@	10
Black, English Drop.....	13	@	14
Black, Frankfort, Drop...	5	@	18
Black, Lamp, common...	12	@	18
Black, Lamp, medium....	19	@	25
Black, Lamp, prime.....	27	@	33
Carmine, No. 40, in bulk.	3.10	@	..
Carmine, No. 40, in boxes or barrels	3.20	@	..
Carmine, No. 40, in ounce bottles.....	4.20	@	..
Chalk, in bulk ₩ ton.	2.50	@	..
Chalk, in bbls. ₩ 100 ℔.	.30	@	35
China Clay, English..... ₩ ton.	12.00	@	18.00
Cobalt Oxide, prep'd.....	2.90	@	....
Cobalt Oxide, black.. lots 100 ℔.	2.60	@	....
Cobalt, Oxide, black..... less 100 ℔	2.65	@	....
Green, Paris, in bulk.....	14	@	14½
Green, Paris, 170 @ 175 ℔ kegs.....	14½@		15
Green, Paris, small pack.	16	@	21
Green, Chrome, ordinary	8	@	13
Green, Chrome, pure....	22	@	25
Lead, Eng., B.B. white.....	9	@	10
Lead, Amn. White, dry or in oil:			
Kegs, lots less than 1000 ℔..		@	7¾
Kegs, lots 1000 ℔ to 5 tons.		@	7½
Kegs, lots 5 tons to 12 tons..		@	7¾
Kegs, lots 12 tons and over..		@	7
Lead, White, in oil, 25 ℔ tin pails, add to keg price.		@	¼
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.....		@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.		@	2½
Lead, Red, bbls. and ⅛ bbls....	6¾	@	7½
Lead, Red, kegs.....	7	@	7¾
Litharge, kegs.....	7	@	7¾
Litharge, bbls. and ⅛ bbls.....	6¾	@	7½

TERMS, &c.—Lead and Litharge.—On lots of 1000 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	@	1½
Ocher, French Washed.....	1½@		2½
Ocher, German Washed....	1½@		3
Ocher, American.....	½@		1¼
Orange Mineral, English...	9	@	9½
Orange Mineral, French....	9½@		10
Orange Mineral, German ..	8½@		9½
Orange Mineral, American.	8	@	8½
Paris White, English Cliff-stone.....	90	@	1.10
Paris White, American.....	70	@	80
Red, Indian, English.....	5½@		7
Red, Indian, American....	2	@	6
Red, Turkey.....	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American.. ₩ 100 ℔.	1.00	@	1.35
Red, Venetian, English....	1.25	@	1.75
Sienna, Italian, Burnt and Powd.₩ ℔	5	@	6½
Sienna, Ital., Burnt Lumps	1½@		3½
Sienna, Ital., Raw, Powd..	5	@	6½
Sienna, Ital., Raw Lumps..	2	@	3½
Sienna, American, Raw....	1½@		1¾
Sienna, American, Burnt and Powdered.....	1½@		1¾
Talc, French.....	1½@		1½
Talc, American..... ..	1	@	1¼
Terra Alba, Fr'ch. ₩ 100 ℔	72½@		80
Terra Alba, English	80	@	85
Terra Alba, American No. 1	70	@	75
Terra Alba, American No. 2	38	@	40
Umber, Turkey, Bnt. and Powd. ₩ ℔	3½@		4
Umber, Turkey Bnt. Lu	2½@		3
Umber, Turkey, Raw and Pawdered.....	3½@		
Umber Turkey, R'w Lmps	2½@		2¾
Umber, Turkey, Bnt. Amer.	1½@		1¾
Umber, Turkey, R'w Amer.	1½@		1¾
Yellow, Chrome.....	10	@	25
Vermilion, Americ. Lead..	11½@		13
Vermilion, Quicks'er, bulk.	..	@	77½
Vermilion, Quicks'er, bags.	..	@	78½
Vermilion, Quicksilver, smaller pkgs.....	..	@	82½
Vermilion, English Import	85	@	87½
Vermilion, Imitation, Eng.	8	@	25
Vermilion, Trieste.....	87½@		90
Vermilion, Chinese.....	90	@	95
Whiting, Common. ₩ 100 ℔	40	@	45
Whiting, Gilders'.....	50	@	55
Zinc, American, dry....₩ ℔	4½@		5¼
Zinc, French, Red Seal.....	..	@	8½
Zinc, French, Green Seal..	..	@	8¾
Zinc, French, V. M. X.....	..	@	7
Zinc, Antwerp, Red Seal...	..	@	7¼
Zinc, Antwerp, Green Seal	..	@	8¼
Zinc, German, L. Z. O....	..	@	6¾
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10¾@		11¼
lots less than 1 ton	11	@	11½
Zinc, V. M. in Poppy Oil, Red Seal,.....	..	@	..
lots of 1 ton and over....	10	@	10¼
Lots of less than 1 ton....	10¼@		10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- obl. lots of one or assorted grades. 1 %; 25 bbls, 2 %, 50 bols, 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese .....₩ ℔	35	@	40
Blue, Prussian.....	29	@	45
Blue, Ultramar.ine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chrome.....	8	@	13
Green. Paris.....	16	@	18½
Sienna, Raw.....	7	@	13
Sienna, Burnt.....	7	@	13
Umber Raw.....	7	@	10
Umber. Burnt	7	@	10

Spirits Turpentine.

In regular bbls.....40%
In machine bbls.....41

Glue.

Low Grade.....₩ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	..
English.....	10	@	15
Irish...	12	@	15

CURRENT METAL PRICES.

NOVEMBER 12 1890.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
⅜ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in.....	₩ lb 2.00 @ 2.10¢
Refined Iron:	
⅜ to 2 in. round and square.. 1 to 4 in. x ⅜ to 1¼ in..... 4½ to 6 in. x ⅜ to 1 in.....	₩ lb 2.10 @ 2.30¢
1 to 6 in. x ¼ and 5-16.....	₩ lb 2.30 @ 2.50¢
Rods—⅜ and 11-16 round and sq..	₩ lb 2.20 @ 2.40¢
Bands—1 to 6 x 3-16 to No. 12.....	₩ lb 2.40 @ 2.60¢
"Burden Best" Iron, base price..	₩ lb..... 3.00¢
Burden's "H. B. & S." Iron, base price.....	₩ lb..... 2.80¢
"Ulster".....	₩ lb..... 3.00¢
Norway Bars.....	4.00¢
Norway Shapes.....	5.00¢

Merchant Steel from Store.

	Per pound.
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots.....	2¾¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots.....	5¢

Sheet Iron from Store.

	Common American.	R. G. Cleaned.
10 to 16.....	₩ lb 3.00 @ 3.00¢	3.50 @ .....¢
17 to 20.....	₩ lb 3.25 @ 3.25¢	3.50 @ 3.75 ¢
21 to 24.....	₩ lb 3.35 @ 3.35¢	3.75 @ .....¢
25 and 26...	₩ lb 3.45 @	3.75 @ .....¢
27.....	₩ lb 3.55 @ 3.62½¢	4.00 @ .....¢
28.....	₩ lb 3.75 @ ... ..¢	4.25 @ .....¢
	B. B.	2d qual.
Galv'd, 14 to 20, ₩ lb.	5.00 @ ...	4.75½ @ .....¢
Galv'd, 21 to 24, ₩ lb.	5.37½ @ ...	5.12½ @ .....¢
Galv'd, 25 to 26, ₩ lb.	5.75 @ ...	5.50 @ .....¢
Galv'd, 27.....	₩ lb, 6.12½ @ ...	5.85½ @ .....¢
Galv'd, 28.....	₩ lb, 6.50 @ ..	6.23 @ ...¢
Patent Planished.....	₩ lb A 10¢	B, 9¢
Russia.....	₩ lb 9½¢ @ 10¢	
American Cold Rolled B. B.....	₩ lb 5¢ @ 7¢	
Craig Polished Sheet Steel.....	₩ lb, 8½¢	

English Steel from Store.

Best Cast.....	₩ lb 15 ¢
Extra Cast.....	₩ lb 16½ @ 17 ¢
Swaged, Cast.....	₩ lb 16 ¢
Best Double Shear.....	₩ lb 15 ¢
Blister, 1st quality.....	₩ lb 12 ¢
German Steel, Best.....	₩ lb 10 ¢
2d quality.....	₩ lb 9 ¢
3d quality.....	₩ lb 8 ¢
Sheet Cast Steel, 1st quality.....	₩ lb 15 ¢
2d quality.....	₩ lb 14 ¢
3d quality.....	₩ lb 12½¢
R. Mushet's "Special".....	₩ lb 48 ¢
" " "Titanic".....	₩ lb 20 ¢

METALS.

Tin.

	Per lb
Banca, Pigs.....	28 ¢
Straits, Pigs.....	22½¢
Straits in Bars.....	26 ¢

Tin Plates.

	Charcoal Plates.—Bright.	Per box.
Melyn Grade.....	IC, 10 x 14..	@ $6.50
" "	IC, 12 x 12..	@ 6.75
" "	IC, 14 x 20..	@ 6.50
" "	IC, 20 x 28..	@ 13.25
" "	IX, 10 x 14..	@ 8.00
" "	IX, 12 x 12..	@ 8 25
" "	IX, 14 x 20..	@ 8.00
" "	IX, 20 x 28..	@ 16.00
" "	DC, 12½ x 17.. ...	@ 6 00
" "	DX, 12½ x 17..	@ 7.00
Jalland Grade.....	IC, 10 x 14..	@ 6.50
" "	IC, 12 x 12..	@ 6.75
" "	IC, 14 x 20..	@ 6.40
" "	IX, 10 x 14..	@ 7.65
" "	IX, 12 x 12..	@ 7.90
" "	IX 14 x 20.	@ 7.65
Allaway Grade.....	IC, 10 x 14..	@ 6.00
" "	IC, 12 x 12..	@ 6.15
" "	IC, 14 x 20..	@ 6.00
" "	IC, 20 x 28..	@ 11.80
" "	IX, 10 x 14..	@ 7.17
" "	IX, 12 x 12..	@ 7.80
" "	IX, 14 x 20..	@ 7.15
" "	IX, 20 x 28..	@ 14.25
" "	DC, 12½ x 17.. ...	@ 5.65
" "	DX, 12½ x 17.. 6 00	@ 6,65
	Coke Plates.—Bright.	
Steel Coke.—IC, 10 x 14, 14 x 20..		@ $5.60
10 x 20..		@ 7.75
20 x 28.. ...		@ 11.25
IX, 10 x 14, 14 x 20..		@ 6.50
BV Grade.—IC, 10 x 14, 14 x 20.. ...		@ 5.60
	Charcoal Plates.—Terne.	
Dean Grade.—IC, 14 x 20..		@ $5.40
20 x 28.		@ 10.70
IX, 14 x 20.....		@ 6.10
20 x 28.....		@ 12.10
Abecarne Grade.—IC, 14 x 20...		@ 5.10
20 x 28...		@ 10.85
IX, 14 x 20.... ...		@ 6.10
20 x 28..		@ 12 10

Tin Boiler Plates.

IC. 14 x 20.....112 sheets.....	@ $13.50
IX, 14 x 28..... 112 sheets....	@ 13 75
IXX, 14 x 31... ....112 sheets	@ 15 25

Copper.

Duty: Pig, Bar and Ingot, 1½¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35% ad valorem.

Ingot.

Lake.....	@ 17½¢
Baltimore Grade.....	@ 15½¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, June 27, 1890, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		25	25	25	26	27	28	31	33
30		72	25	25	25	26	28	30	34	...
36	96		25	25	25	27	29	33	36	....
36		96	25	25	26	28	30	34	38	....
48	96		25	25	27	29	31	35	....	....
48		96	25	25	28	30	32	36	....	....
60	96		25	25	30	32	37	....	....	....
60		96	25	26	31	....	....	....	....	....
84	96		26	27	....	....	....	....	....	....
84		96	27	28	....	....	....	....	....	....
Over 84 in. wide			28	30	....	....	....	....	....	....

All Bath Tub Sheets.....	16 oz.	14 oz.	12 oz.	10 oz.
Per pound.....	$0.27	0.29	0 31	0.35

Bolt Copper, ⅝ inch diameter and over, per pound..... 25¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Copper Bottoms, Pits and Flats.

	Per pound.
14 ounce to square foot and heavier.....	29¢
12 ounce and up to 14 ounce to square foot.....	30¢
10 ounce and up to 12 ounce.....	32¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each.....	8¢
Tinning sheets on one side, 30 x 60 each.....	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each.....	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each.....	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each.....	12¢
Tinning sheets on one side, other sizes, per square foot.....	2½¢

For tinning both sides double the above prices.

Planished Brass and Copper.

14 x 48.

14 and 16 oz. and heavier..31¢. By the case...30¢ ₩ lb
12 oz. and lighter.....33¢. By the case...32¢ ₩ lb

24 x 48 and 30 x 60.

14 and 16 oz. and heavier..44¢. 12 oz.....37¢ ₩ lb

Seamless Brass and Copper Tubes.

O. G.	N. G.	⅜	¼	⅝	½	⅜	1	1¼
8-14	6-12	39	35	32	31	30	29	26
15	13	40	35	33	32	31	30	27
16	14	41	36	34	33	32	31	27
17	15	42	37	35	33	33	32	28
18	16	44	38	36	34	33	32	29
19	17	45	39	37	36	35	34	31
20	18-19	46	41	39	38	37	36	33
21	20	48	43	41	40	39	38	36
22	21	50	44	42	41	40	39	38
23	22	52	46	44	43	42	41	41
24	23	55	48	46	45	43	42	43
25	24	58	51	48	47	46	45	47

Copper Bronze and Gilding Tube, 4¢ ₩ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive.....	35¢
Plain, above 3 inch.....	45¢
Plain, 5-16 inch.....	45¢
Plain, ¼ inch.....	60¢
Plain, 3-16 inch.....	$1.00
Plain, ⅛ inch.....	1.50
Fancy Tubing, Brass, to No. 20, inclusive.....	45¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list.....	25 @ ... %

Roll and Sheet Brass.

Discount from list.....	20 %

High Brass Rods.

Over 1 inch diameter.....	29¢
¼ inch to 1 inch diameter, both inclusive.....	30¢
No. 8 and less than ¼ inch diameter.....	32¢
Smaller than No. 8.....	33¢

Hexagon, Octagon and Square, 2¢ ₩ lb advance over Round Rods.

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter.....	6½ @ 6¾¢
"Bertha".....	8¼¢

Zinc.

Duty; Sheet, 2½¢ ₩ lb.

600 lb casks.....	7¼¢
Per lb.....	7¾¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American.....	5¼¢ @ 5¾¢
Bar.....	6¼¢
Pipe, subject to trade discount.....	8¢
Tin-Lined Pipe, subject to trade discount.....	15¢
Block Tin Pipes, subject to trade discount.....	45¢
Sheet, subject to trade discount.....	8¼¢

Solder.

½ @ ½ (Guaranteed).....	16¼¢
No. 1.....	13¢
Extra Wiping.....	11¾¢ @ 13¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson.....	₩ lb 22 ¢
Hallett's.....	" 20 ¢

ALUMINUM.

Prices in Ingots.

$2.00 ₩ lb in lots of 1000 lb and over.
$2.25 ₩ lb in lots of 500 lb and over.
$2.50 ₩ lb in lots of 100 lb and over.

Prices Per Pound on Rolled Sheets.

(Brown & Sharpe, Standard Gauge.)

Wider than. And including.	2 in. 10 in.	10 in. 14 in.	14 in. 18 in.	18 in. 22 in.	22 in. 24 in.
Up to No. 20 inclusive...	$2.50	$2.60	$2.80	$3.00	$3.20
Nos. 21, 22, 23 and 24....	2.60	2.70	2.90	3 10	3.30
Nos. 25 and 26.....	2.70	2.80	3.00	3.20	3.40
Nos. 27 and 28.....	2.80	2.90	3.10	3.30	3.50

Sheets, thinner than No. 28 gauge and wider than 24 inches, special prices not less than $5 per pound.
Add 30 cents per pound for sheets cut to particular widths and lengths.
Sheets rolled to .001 in. and under, 50 cents per ounce.
Leaf in books, 20 cents per book; $2 per pack of 10 books, sheets 5 x 5 inches.

Aluminum Tubing.

From $4 per pound upward, according to size and thickness of walls.

Aluminum Castings.

From 50 cents upwards per pound extra over the cost of the metal in ingots, according to the number wanted, weight, the difficulty of casting, cost of patterns, &c.

Aluminum Wire in Coils.

(Brown & Sharpe, Standard Gauge.)

	Per lb
All numbers up to No. 24 (.064 in.) inclusive.....	$3.00
Nos. 15 (.05706 in.) to 22 (.0253⅝ in.) inclusive....	3.25
Nos. 23 (.02571 in.) and 24 (.0201 in.) inclusive...	3.50
Nos. 25 (.0179 in.) and 26 (.01594 in.) inclusive....	3.75
Nos. 27 (.014195 in.) and 28 (.012641 in.) inclusive	4.00
Nos. 29 (.011257 in.) and 30 (.010023 in.) inclusive	4.25
No. 31 (.008928 in.).....	4.50
No. 32 (.00795 in.).....	4.75
No. 33 (.00708 in.).....	5.00
No. 34 (.00630 in.).....	5.25
No. 35 (.00561 in.).....	5.75
No. 36 (.00500 in.).....	6.25
No. 37 (.00445 in.).....	7.00
No. 38 (.003965 in.).....	8.50
No. 39 (.003531 in.).....	12.00
No. 40 (.003144 in.).....	16.00

Spooling, on 1-pound spools, 15 cents per pound extra
Spooling, on 10-pound spools, 5 cents per pound extra

Old Metals.

(Prices Paid in New York.)

Heavy Copper.....	₩ lb 12 ¢
Light Copper.....	₩ lb 11 ¢
Heavy Brass.....	₩ lb 10 ¢
Light Brass.....	₩ lb 8 ¢
Lead.....	₩ lb 4 ¢
Tea Lead.....	₩ lb 3½¢
Zinc.....	₩ lb 3 ¢
No. 1 Pewter.....	₩ lb 10 ¢
No. 2 Pewter.....	₩ lb 8 ¢
Wrought Scrap Iron.....	₩ gross ton $19.00
Heavy Cast Scrap.....	₩ gross ton 12.00
Stove Plate Scrap.....	₩ gross ton 8.00
Burnt Iron.....	₩ gross ton 6.00